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May, 1961

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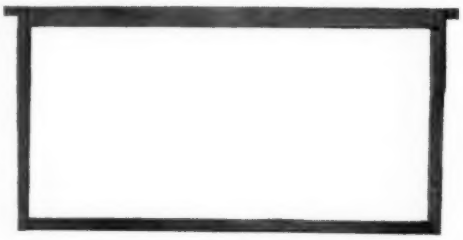

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Hamilton, Illinois

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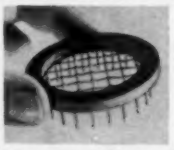

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Honey Plant Gardens

Editor - Melvin Pellett

Melvin is the son of Frank C. Pellett, formerly one of the editors of the American Bee Journal and author of many books about bees, including American Honey Plants. Frank established the Honey Plant Gardens at Atlantic, Iowa, years ago. After the loss of his father, Melvin took the gardens over as part of his market garden and horticultural projects at the home place. His son Norman is now in business with him. Melvin assumed the editorial job on honey plants since he had been advisor for the Journal on honey plant questions for a long time.

Shrubs and Trees For Nectar Production

by ROBERT M. MEAD

Planting for bees alone has seldom paid on a dollar and cents basis, but several new developments make the planting of trees and shrubs suitable for bees more practical than has been the case in the past.

In the first place, an increasing number of nurseries make both trees and shrubs available at seedling size at prices that make it possible to set them out by the hundred if desired. Only the most general information on prices can be given but seedlings suitable for mass planting can now be obtained at prices ranging from $9.00 a hundred to a high of about $50.00 a hundred. Even at 50 cents each, these seedlings are very reasonable when it is considered that many nurseries may charge up to $5.00 each for specimen plants. Not only are the seedlings reasonable in price, but they are at an age when transplanting is quick and easy compared to the handling of landscape size material.

Also the need for planting trees and shrubs has become tremendous. Millions of acres need reforestation. Hundreds of miles of roadway show the scars of recent construction and trees and shrubs are needed by the thousands to help cover up this eyesore. Plantings to help wildlife will become increasingly necessary as hunters multiply and game cover disappears. All of these needs make it possible to charge much of the cost of the seedlings and planting to some other project while at the same time greatly increasing possible bee pasture.

The writer has also developed a method that greatly increases the length of blooming time in suitable areas. This consists simply of making plantings at various altitudes. For example locust blooms for only about 10 days but by planting in various places from valley bottom to mountain top, it is entirely practical to get a full month of locust blossoms within reach of the bees. Although no exact rule can be given, bloom of many plants is delayed from 3 to 6 days for each 100 foot gain in altitude.

To list all the shrubs and trees suitable for this purpose would require a book on the examples given here are intended only to stimulate the imagination.

Tung oil tree and Japanese candle tree are suitable only in a narrow area along the Gulf coast but they yield nectar abundantly.

The hollies, Vitex, Bee Bee tree, sourwood, tulip poplar and almost the whole list of blooming shrubs are suitable for the vast mid-continent area where winters are fairly mild and short.

We are fortunate also that many good trees and shrubs of value to the bees can stand the north harsh winters of the northern border states. Locust has already been mentioned; basswood is the classic honey source and up to now has seldom been planted in quantity; Amur cork tree, a rather new one, is entirely hardy, a good small shade tree and a nectar source; Russian olive and Siberian Pea tree can be called either shrubs or small trees but both are good for the bees and may be considered of some value to wildlife. Among the many shrubs available, I would like to mention Clethra, which is very reliable, and smooth sumac which has never received the attention it deserves as a honey plant.

There are a few other things that should be mentioned in connection with planting seedlings of trees and shrubs. Some time is required to get results. In general, it may be stated that seedlings planted on rather ordinary soil nearly establish themselves the year they are transplanted. The second year they make some growth and from the third year on should develop rapidly. Some bloom on shrubs can be expected at three years while trees may require anywhere from 5 to 10 years to be of real value to the bees. The time element should not be used as an argument against planting, however. Ten years is a long time only when looking ahead. In reality, it passes all too quickly.

Hardiness of trees and shrubs is a subject that throws many for a loss, including those that write books on horticulture. We know that many trees are suitable only for the Gulf coast and Florida or sections of California. We know that many others will stand only a moderate amount of cold and that for short periods, but there are trees and shrubs in the

southern mountains that are hardy well up into the Northern States. In some instances the only way to find out if a tree or shrub is hardy or not is to try a few in a favorable location.

Seedlings of trees and shrubs may now be obtained from many sources. Pellett Gardens, Atlantic, Iowa specialize in these. Other sources can usually be found by consulting the Department of Agriculture in your state.
Vermont

Purple Loosestrife

Purple loosestrife is one of the most showy and enduring of the perennials in the honey plant gardens. For more than fifteen years it has proved of easy culture, to bloom freely beginning in midsummer and always attracting the bees. The purple flowers on long spikes are a beautiful sight. In several plots it has lasted for years with minimum of care. It blooms very freely continuing through the fall until killing frost, though the bloom may be interrupted at times during very dry weather.

Purple loosestrife, technical name *(Lythrum salicaria,)* is an old-world plant which has become naturalized in places in North America. It will grow easily over a wide range in humid climate given garden cultivation. It is especially adapted to very moist situations and in some places in our Eastern States has naturalized over large areas on wet or marshy land. It grows from three to six feet in height and furnishes good bee pasture lasting through the fall.

Seed of purple loosestrife is very small with very large number of seeds per ounce. The seed requires very moist conditions for germination. In our experience if the seedbed surface dries out or becomes crusted during germination period or while the tiny plants are getting started, failure will usually result. While if the seedbed remains constantly moist, by daily watering if necessary, hundreds of seedlings may result from small amount of seed. Under right conditions the seed germinates in a few days after sowing. The small seedlings may be transplanted, skill and care required, at the stage usually reached in from six to eight weeks after germination. However, if one wants the plants to grow in locations other than the original seedbed, that is easier to accomplish if they can continue growing where they start through the first season and moved during dormancy, that is, very early the next spring before new growth has started. We find purple loosestrife one of the easiest of perennials to transplant

Purple Loosestrife

and get started when dormant plants are used for early spring planting.

Purple loosestrife is especially adapted to grow in very moist situations. In some places, as reported from New York State and Massachussetts, it has spread wild to cover large areas where soil stays moist as on wet or boggy land. It is reported as a major source of nectar where sufficiently plentiful. Blooming from mid-summer until frost it furnishes bee pasture for a long period. It is sometimes started in such situations by scattering the seed very early in the spring. This method meets with varying degrees of success as very moist conditions are required for germination. This is an easy way when weather is right for starting the plants and there is moist waste land available. We have some growing along a ditch in a field where we scattered seed some years ago. At first there were only a few plants started which have since seeded to propagate further area. In this situation there is much competition of grass sod, also we have had some dry years so conditions are not the most favorable for this plant, and it has not spread extensively. However it has remained through the dry seasons and the plot spreads to some larger area from seed establishing the plants during wet weather.

Mr. Fred Russell has written us a number of times from Massachussetts telling us of the great help purple loosestrife has been to his bees where there are many acres of it growing. He tells of it furnishing good bee pasture over long time even in the driest years when there is not much other bee forage available.

Purple loosestrife is very desirable for planting in flower gardens and borders over a wide range of climate and soils. It grows easily and is long lived under garden cultivation and gives a showy bloom of purple flowers. It is especially desirable for those who wish flowers to attract the bees. Also a plant to naturalize for bee pasture on wet soil, which is favorable to this plant.
(From the Honey Plant Gardens)

Cobalt For Help In Storing Nitrogen In Alfalfa

The University of California has come up with some experimental work which indicates that cobalt is the mineral which can determine whether the alfalfa plant gets little or great amounts of nitrogen from the air, and thus governs its growth.

Increasing the barely traceable quantities of cobalt, by as little as one 24 billionth of a gram in a 4 liter flask in the purified solution in which the alfalfa grew, would increase by 20 times the amount of nitrogen the plants fixed from the air.

Might there not be some similar relation between the deficiency of some mineral and the nectar producing possibilities of the plant? European sources intimate that boron may be the catalyst. But apparently no one has given attention to such connection, or at least we have heard little of it.

Willows As Early Season Sources of Pollen and Nectar

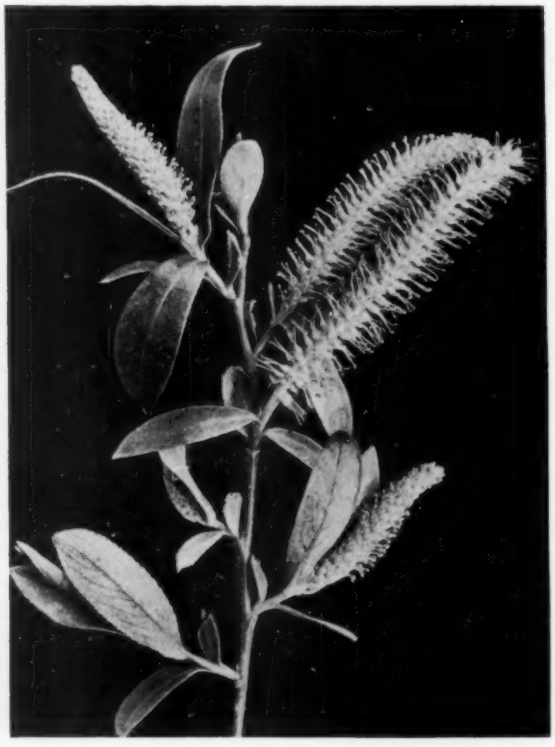
by FRANCIS O. HOLMES

During the past summer the writer made an extensive collection of willow cuttings from many parts of New Hampshire. Some were obtained also from Maine. These cuttings, each representing a naturally occurring wild plant that was presumed to have grown directly from seed, were kept a few hours (or sometimes overnight) in plastic bags. In these bags the cuttings could be transported readily over considerable distances. As soon as possible they were planted in rows in moist sand, where they soon developed new root systems. They were then transplanted to the writer's farm, near Henniker, N. H., for future comparative tests of their nectar secretion and pollen production.

Most of the cuttings thus collected and rooted were from naturally occurring seedlings of the common pussy willow, a widespread and variable species. Some represented other willow species or hybrids. Natural hybrids between different willow species were perfectly acceptable, because whatever individual ability they might have to produce pollen or nectar would be transmitted in general to their vegetatively propagated cuttings without change. Plants of hybrid origin might be expected in some cases to be inferior to, but in other cases superior to, the more nearly inbred lines from which they had arisen. Botanists find the specific identification of willows a difficult task because of the occasional cross-pollination between species that occurs in nature. Identification of willows as a group is easy, however, because their characteristically single-scaled axillary buds are visible throughout most of the year. These buds are especially conspicuous in late summer, autumn, and winter.

Beekeepers often have noted the virtues of individual willow trees or shrubs in providing both pollen and nectar in early spring. Bees benefit greatly from nearby sources of food on chilly days. If any individual willow plant can be identified in the future as providing much more than normal quantities of nectar, such a willow can be propagated asexually and planted in appropriate places. It can be brought into cultivation as a horticulturally useful type by merely rooting numerous cuttings from its branches. A cutting taken from one-year-old wood, perhaps a quarter of an inch in diameter and six inches in length or larger in both dimensions if convenient, will almost always form new roots if it is stuck more or less upright in moist sand or wet soil of any kind. In fact, willow cuttings differ from cuttings of most other plants by producing new root systems even when standing in shallow water.

Individual willow plants are always either male or female, never both. Females obviously will not be sources of pollen. No one seems to have made a careful study to determine whether females are on this account better sources of nectar. They might well prove to be, in view of the fact that they do not have to expend their energies in the annual production of large amounts of pollen at blooming time, although they do usually expend energy in making seeds each year after they blossom. Sterile hybrids, incapable of producing seeds, may yet be found and these may divert more of their energies to nectar secretion. The beekeeping literature now in existence merely reports that both males and females serve as significant sources of nectar, and the males as substantial sources of pollen, at an



Number 1

Number 2

early and critically important time of the year.

The great variability that exists among willow species and willow hybrids suggests the possibility of finding, and propagating vegetatively, willow plants that bees will frequent more than they will neighboring willow plants of the same or similar species and hybrids.

Beekeepers have found, in general, that special plantings of nectar-producing plants do not pay if they are to be devoted solely to honey production. This, however, is true only because nectar plants have not been selected in such a way as to specialize them for intensive use in bee farming. No truck-crop farmer could afford to plant Queen Anne's lace (which is otherwise known as wild carrot) in competition with a neighbor who would plant a modern variety of the cultivated carrot. Neither could a poultryman afford to feed the wild jungle fowl of India in order to collect and sell its eggs in competition with a neighboring poultryman who would specialize in the feeding of the modern white leghorn hen.

Plants such as sugar cane and sugar beet have been bred and selected for the formation of far more sucrose than is found in the slightly sugary tissues of related wild canes or wild beets. In a similar way, breeding and selection of nectar plants must soon be undertaken in a serious way to produce uniform and copious secretion of nectar where variable and sparse flows are now the rule.

Perhaps we shall never have high-yielding strains of all our common nectar-producing plants, though it would be unwise to assume this as yet. The fact is that we have not learned to harvest all the nectar that is produced by plants that grow spontaneously around our apiaries and it is common knowledge that substantial amounts of nectar go unused each year for lack of strong colonies of honey bees to collect it when it is available, especially in early summer. Hence we do not need at this time to produce better yielding nectar sources for the seasons of the year when nectar is commonly available in excess.

It is to develop strong colonies in early spring that we need an especially high-yielding early season source of nectar. We must develop at least one cultivable plant that can be used in earliest springtime to furnish fresh stores both of pollen and nectar *near our hives* when bee flights are still difficult for overwintered bees that may have depleted their stores dangerously by brood rearing.

Willows would be ideal for this because they could be grown near overwintering beehives. They blossom early in spring. They could furnish large amounts of pollen and nectar per hour of bee flight. They persist from year to year, being extremely hardy with respect to cold. They can be grown to blossoming size quickly in new locations, often beginning to bloom within a year or two after they are planted.

A concerted effort should be made among all beekeepers to locate and test numerous willow seedlings that are already in existence. Bringing together cuttings of individual seedlings from scattered geographic locations should give unusual opportunities for hybridizations to occur, thus furnishing also new types of seedlings of differing capacities for nectar secretion.

The writer hopes eventually to assemble a substantial collection of willows from widely separated regions; from these he will attempt to select the individuals most regularly attractive to honey bees. Crosses between such selected plants may subsequently give even further improvements that can in turn be selected for immediate use in beekeeping practice or for use in further breeding procedures.

Number 1 - White willow, Salix alba.

Number 2 - Flowers of common willow (Paul Hadley).

Number 3 - Goat willow in the Gardens, now a large shrub.

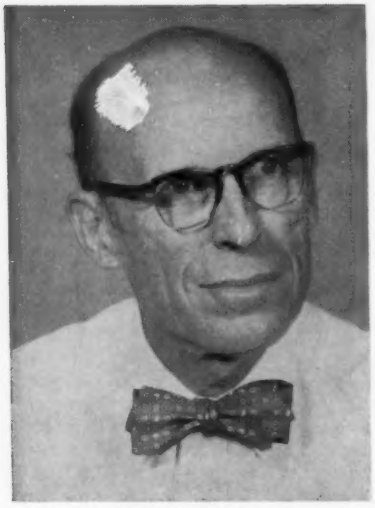
Number 4 - Pussy willow.

Number 3

Number 4

Effect of Yellow Jessamine on Honey Bees

by E. OERTEL, Entomology Research Division, Agric. Res. Serv., U.S.D.A., Baton Rouge, La.[1]



Yellow jessamine *(Gelsemium sempervirens* (L.) Ait. b.) grows in fence rows and on the edges of wooded areas in West Feliciana Parish, La. It blooms in February and March. In 1959 a beekeeper in the parish had a heavy loss of adult honey bees *(Apis mellifera* L.) in some hives when the jessamine was in bloom. In 1960 no unusual losses were seen during a comparable period. Neither the apiary inspectors nor the beekeeper noticed any brood poisoning in either year.

There are conflicting reports with regard to the effects of yellow jessamine on honey bees. Pellett (1930) stated that some Georgia beekeepers believed that the flowers were poisonous, whereas others thought they were not. Burnside (1935) reported that young bees in Georgia had a large amount of yellow jessamine pollen in their intestinal tracts. These bees had been dying in excessive numbers according to the beekeeper who sent in the samples.[2] Burnside and Vansell (1936) reported that young adult bees were killed by yellow jessamine but, eggs, larvae, and pupae were unaffected. On the contrary, Lovell (1956) reported that in Texas the brood was killed when the flowers were worked by bees. Arnold (1954) wrote: "Nectar from this plant [jessamine] is thought to be poisonous to bees, but there seem to be no scientific data to support this reputation." W. H. Purser[3] (personal communication) stated that South Carolina beekeepers believe that honey bee larvae are killed by jessamine poisoning. He knew of no experimental data to demonstrate such an effect. Van Dersal (1938) and Muenscher (1939) stated that yellow jessamine leaves were poisonous to livestock, but these authors did not discuss the blossoms. Eckert (1946) listed several nectar and pollen plants believed to be poisonous. Hitchcock (1959) showed that pollen of the death camas *(Zigadenus venenosus Wats.)* was poisonous to caged honey bees. Tests were made at the Southern States Bee Culture Laboratory in 1960 to learn if yellow jessamine flowers would kill caged honey bees.

Method

Yellow jessamine flowers were collected in 1960[4] and tested with caged bees of unknown age. The treatments used and dead bees found in the replicate cages, each initially containing about 150 live bees, were as follows:

Treatment	*Number of dead bees after 5 days*
1:1 sugar sirup; 10 to 20 fresh jessamine flowers added to cages each day	20
1:1 sugar sirup made with water in which 50 blossoms had soaked for 18 hours	6
1:1 sugar sirup containing 50 finely ground blossoms	14
1:1 sugar sirup containing pollen from 30 blossoms	5
1:1 sugar sirup in which the basal sections of the jessamine blossoms had soaked for 1 hour	9
1:1 sugar sirup (control cages)	3

Results

Eight was the largest number of bees to die in 1 day. These deaths occurred in one cage of the pair in which fresh flowers were used. It is possible that some of the bees became entangled in the blossoms and could not reach the sirup feeder. No bees died in one of the pair of cages where pollen was added to the sirup nor in one of the control cages. In any event, the death rate of bees in all the tests did not differ significantly from that in the control cages.[5] We can conclude that yellow jessamine was not poisonous to the adult bees in these tests.

Discussion

The structure of the yellow jessamine blossom is such that the pollen is easily accessible to honey bees. Only traces of nectar were seen in the blossoms collected in 1960. The corolla tube is about ½-inch deep below the anthers, with an inside diameter of 0.1574 inch at the anthers and 0.0787 inch near the bottom. In addition, the stamens and pistil within the corolla tube take up so much room that it is unlikely that a honey bee could force her tongue to within reach of nectar that might be present. Because bumble bees are scarce when jessamine is in bloom, they could not be blamed for chewing holes in the corolla tubes, and thus allowing honey bees to reach the nectar.

Small (1933) reports that yellow jessamine grows from Florida to Texas and from Arkansas to Virginia. Since the species is widely distributed and reports of poisoning are rare, we can assume that the flowers are not generally injurious to bees. Perhaps the blossoms are usually unattractive or weather is often unfavorable for bee activity when the flowers are open. Or the flowers of some vines may secrete poisonous nectar every year or at intervals. In most years honey bees may be unaffected or injury so slight that it goes unnoticed. MacGregor (1960) reported that the nectar from some species and hybrids of rhododendron was poisonous whereas that from others was harmless. Apparently, he did not investigate the pollen.

The test described in this paper included adult bees only and flowers from a limited locality. More information is needed on the effect of yellow jessamine pollen and nectar upon bees and brood. Since Pellett (1930) stated that yellow jessamine honey may be poisonous to bees, its possible toxic effect should be investigated. Perhaps the reported injurious effect of the honey on man is, as Ordetx (1952) suggested, an allergic response rather than a true poisoning.

Footnotes

[1] In cooperation with Louisiana State University.

[2] Information from Julia S. Merrill, Librarian of Bee Culture Laboratory, Beltsville, Md.

[3] Assistant Entomologist, South Carolina Crop Pest Commission.

[4] Gayden Perkins, a beekeeper in West Feliciana Parish, assisted with this collection.

[5] J. U. McGuire, Grain and Forage Insects Branch, U.S.D.A., made the statistical analysis of the death rate.

Abstract

Yellow jessamine has been reported to be poisonous to honey bees, but there seems to be no scientific data to support this conclusion. Tests were made at Baton Rouge in 1960 to learn if the jessamine flowers would kill caged honey bees. The death rate of bees in the tests showed that yellow jessamine was not poisonous to adult bees.

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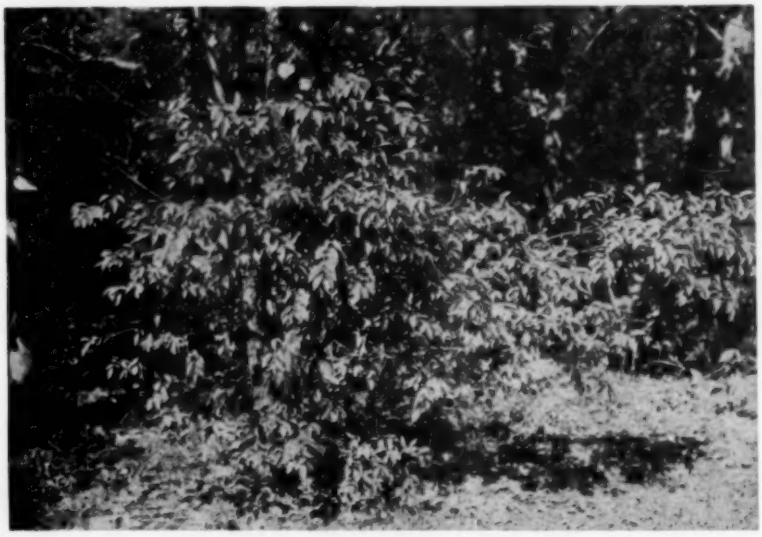
The fruit of Indian Cherry, Rhamus caroliniana



Narrow leafed buckthorn, Rhamus lanceolata.

Two Buckthorns

AUGUST P. BEILMANN
Gray Summit, Missouri

The Middle Western beekeeper, particularly the one within the fringe of the Ozarks, has two buckthorns which in some years are active competitors of the sweet clover for the attention of the bees. Both of these plants are reportedly of wide distribution - from New York to Florida and west to Nebraska and Texas. While the botanical texts are probably accurate in this distribution, actually the buckthorns have nearly disappeared over much of their range. Too much grazing, woods burning and poor logging practices quickly exterminate them.

The first to flower is the narrow-leafed buckthorn *(Rhamnus lanceolata)*. It has small narrow leaves up to one and one-half inches long with two kinds of perfect flowers on distinct plants. The one has many short-stemmed flowers and the other with fewer flowers on a larger pedicel. The flowers are green and quite inconspicuous. The plant is easily overlooked since it is little more than a shrub sometimes attaining the height of six feet. This plant can be found on glades in the open woods and generally in the limestone area.

The Indian cherry *(Rhamnus caroliniana)* is the larger of the two and becomes almost tree-like, exceeding twenty feet on occasions. This is the later blooming of the two, but the flowers are larger and in a year of adequate rainfall very attractive to bees. This plant is a competitor of the Juniper on some of the rockiest, driest Ozark ridges, but a satisfactory ornamental if transplanted to the garden; or it can be used as part of the bee yard windbreak. The leaves of this plant are very shiny, leathery and attractive at all times. The brilliant red fruit, which finally turn black when ripe, is a conspicuous feature of the late summer woods, and many a squirrel hunter who doesn't know the plant by name would know it from its conspicuous red berries.

While we could hardly recommend these plants as potential sources of bumper honey crops, none the less, they belong to that group of plants which produce nectar at a time when no major nectar crop is in bloom. Their ability to produce nectar varies considerably; the narrow-leafed buckthorn, flowering before the clovers, appears to be a more dependable plant than the Indian cherry which flowers during the sweet clover bloom. The latter must have ample moisture to produce nectar of a competitive quality. The great value of the buckthorns, as is true of many other native plants, lies in the fact that it helps bridge the gap between the major honeyflows, and thus it may be of greater local importance to the beekeeper than a superficial examination would indicate.

Hyssop

Hyssopus offinalis

The photo shows a row of the old world herb, hyssop. This is an entirely different plant from Anise Hyssop which has been written up a number of times as an outstanding honey plant. This one is *(Hyssopus offinalis)*, a perennial herb or sub shrub native to Eurasia. It has been long used for ornament and as an herb for flavoring.

This row had been planted for a number of years and has gradually spread wider. The foliage is attractive, growing to a foot or more in height. The numerous blue flowers in terminal spikes are ornamental in mass, beginning in June and lasting through much of the summer. The flowers are nearly always visited freely by both honey bees and wild species during the long blooming period. This plant is fairly easily grown from seed and the young plants up to a year old, transplant readily. It makes a nice ornamental for borders.

(From the Honey Plant Gardens)

A Bumper Sourwood Year

by CHAS. W. SMITH

The year 1960 was a bumper crop year in western North Carolina mountains. I remember six or seven years ago when I first came to these parts, my neighbor got me interested in bees by presenting us with a "sample of sourwood." That did it. I began to ask about bees. How could I get started? My neighbor offered to give me an 8-frame hive and told me how to prepare it. Another neighbor promised to give me a swarm. I had forgotten about it when one day he announced "Preacher, I got you a big swarm today. Come by about dark and take it home." I did. It was a proud day. That year there must have been a good sourwood flow for I got about five quarts of beautiful sourwood honey from that swarm. They wintered well and I added two colonies the following year.

Blossoms of sourwood.

However, through the seasons, sourwood has been very lean. I manage to get a little each year but this past season from five colonies, we harvested about 400 pounds of the most beautiful sourwood honey I have ever seen.

Several people who work at the mill here say they never saw anything like it. One man exclaimed "I've handled and bought sourwood honey twenty-five years and this is the best looking of all." I wrapped each four pound comb in clear paper and sealed it with a hot iron. Those ten supers dwindled down to one or two.

In such a season, the beekeeper wishes for more bees. I had four colonies not in condition for a crop but they are now and won't it be nice if we have an equally good sourwood crop in 1961? This is doubtful though. Such crops do not happen every year.

Many old timers say that the heavy snows last March influenced the flow. Maybe so. It was a thrill to watch the bees fly early and late with such vigor. They were Italians. I do not believe any other race would have gathered any more honey. Someone occasionally writes that Italians are not so good here in the mountains, but I have not found it to be true. In fact, I have not found the darker races even as good as the Italians.

The hives are gleaming on the mountain side these autumn afternoons, well filled with stores and waiting the first warm days of approaching spring. Will there be another bumper crop of sourwood in 1961? Hope so.

Swannanoa, N.C.

Herbarist Honey Article

In the No. 26 issue (1960) of the Herbarist (Publication of the Herb Society of America) appears an article by Frances R. Williams on "Pasture for the Bees in a Shaded Garden." An effort is made to classify the plants by their blooming dates, early summer, midsummer, early fall and later. Some of those mentioned are hyssop, lemon balm, mint, bergamot, the Hostas, wingstem, asters, heathermint, motherwort, fleece flower, brown-eyed Susan, figwort, and goldenrod.

Mrs. Williams is an enthusiast about herbs and bees. Her subsequent observations are quite interesting.

★ Editorial of the Month ★

Honey Marketing Is Your Problem

by CLARE D. FLOYD
Chairman, Federation Marketing Committee

The number one problems facing the beekeeping industry today is the maintenance and development of our honey market.

This problem is not a new one; however, there are certain factors which influence the market, and since these continually change, honey marketing appears to have many new challenges.

The rapid expansion of self-serve supermarkets, and superettes, coupled with their direct buying practices have all but eliminated wholesale marketing agencies and small independent grocery stores. This has forced drastic changes in methods of advertising and promotion of staple groceries.

Supermarketing methods have removed outlets used by beekeepers who until a few years ago practiced packing honey for independent grocers.

To set up a national program that can be used to promote honey is a perplexing problem; however, certain general aspects are apparent which determine in a large part the approaches we may use. They are:

(1) Our industry flourishes in every state in the Union.

(2) The participating beekeepers in every state are more or less organized.

(3) Many beekeepers' organizations lack strong leadership and also goals to work for. They have so far not recognized their role in public relations.

(4) Everyone connected with the industry has within his grasp a wonderfully intriguing story of, "The Life of the Bee," "How Honey is Gathered," as well as much folklore about the "Antiquity of Honey and its Food and Medicinal Advantages."

These characteristics must be kept in mind and used in a reasonable way if we are to gain from this indirect approach in marketing. We are now faced with the problem of developing a workable plan that will operate without a financial crutch.

Our objective is to influence new customers to use honey and old customers to use honey more often. This must be achieved without a budget. How? The technique to be employed is one of friendly education.

The industry needs dedicated personnel who will devote time and thought to get results. To work with such dedicated persons, the industry must have strong local beekeepers' associations that will meet at least four times a year to plan promotional efforts.

These local associations should not be defined along county lines. In some states a local may include seven or ten counties. In others a local may include only one county or less, depending on the number of beekeepers residing in the area.

The success of our program depends upon the strength and determination of these local associations.

What shall such a group do? Carefully study your needs, the facilities available to you, and the personnel of your organization. For example, in our county, which is esssentially rural, our job was to induce wider use of honey in farm homes. We had several strong 4-H organizations who sponsored baking as one of their projects. Some of our beekeepers are large operators who prefer to spend money rather than time and effort to promote honey. With these things to work with, a 4-H Honey Baking Contest was started.

As a result, over 100 honey cookbooks were placed in the hands of future homemakers. The competition immediately started wider use of honey. This is a continuing program that is bound to bring results.

In the urban area where a different set of conditions existed, we examined our possibilities and found the local Rotary Club needed a guest speaker. Our president accepted the assignment on the condition he could be sure the dessert to be served would be a honey sundae and that he could give each Rotarian a copy of *his own favorite honey recipe*. During the talk, he reminded his listeners of the health value of honey, the built-in flavor of the several varieties of honey, and the simplicity and convenience of honey desserts.

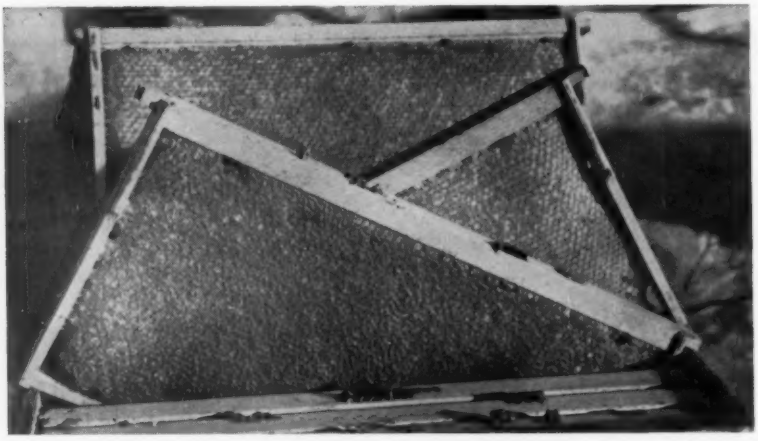
Our local P.T.A. needed a fund-raising project for their family night. Among other features ice cold honey lemonade was sold. It was such a delicious refreshing drink, everyone wanted the recipe. Many copies were made available. The superintendent of schools asked to use our dispenser for the football games this fall, and so many new honey customers are born.

This is your program. It is a must that marketing appear on the agenda for your next meeting. Make it a panel discussion; see how interesting it can be.

In succeeding issues, the Journal will print ideas that you may be able to use. If you have a plan you like, write the editor and tell him about it. Remember our slogan, *"New Customers To Eat Honey and Old Customers To Eat Honey More Often."*

The Commercial Operator

EDITOR— S. JOAQUIN WATKINS



Three sealed combs of honey, the reserves needed at all times according to the old timers.

Bee yard in late winter.

Simplified Feeding

by CHARLEY W. MOOSMAN

The longer we stay in this business of beekeeping, the less we seem to know about it. Some of the things that we used to think were very important have lost their importance and in some cases are just not done anymore.

One of the things that is and always will be of great importance is the feed. This will never change, as without feed there is nothing, but the ideas about it and the ways of doing it have changed a lot in the past few years. It is not too long ago that the bees were checked in the fall and if there was enough honey to last till spring that was all that we cared about as all the bees were given an early spring check and any that were short were given frames of honey if we had them. I say, if we had them, because usually we ran out. When that happened those that were short of feed were fed syrup or in some cases dry sugar.

When sugar syrup was used it was fed in various ways. All took a lot of time and some were rather messy. Feeder pails over the hole in the inner cover or right on the top bars were used at one time as well as division board feeders. On several occasions when feeders were short the syrup was sprinkled or sprayed into the empty combs. This got the job done but was as stated above, rather messy. At a later date the syrup was dumped into open vats and we let the bees carry it into the hive. This was quick and easy, of course some hives got more than they needed, the weak ones probably not enough, and you also fed the neighbors' bees but they were probably in need of feed too.

Dry sugar was also used but not for long as it doesn't work too well or at least it didn't out here. It was usually placed on the inner cover and seemed to keep the bees going but they would not build up like we wanted them to during the spring of the year.

Yes, the bees are still fed but in a lot simpler and we think a better way than ever before. Now when the bees are checked in the fall they are left enough honey to carry them through the winter and also THROUGH THE SPRING BUILD-UP PERIOD. This works out very well in this area and it certainly saves a lot of work and time. We do not have to check as close or as early, as to feed in the spring, and a much bigger item, we do not have to haul sugar or syrup out to the bees when the roads are very bad, and at that time of the year there is other bee work that needs to be done.

At one time we thought that we had to feed syrup to make the bees build up faster during the spring build-up period, but we have found, in this area at least, that the bees will build up very fast on the honey that they have in the hive, if THERE IS ALWAYS A RESERVE OF FEED. The old timers tell us that this reserve should never be less than three combs. This seems like a lot of honey to have in the hive when the honeyflow starts but it's like money in the bank. It's there if you need it and is never wasted or thrown out. The bees seem to have the uncanny ability to check the feed reserve and will build up in proportion to what that feed reserve is. The best queens will only do as good as the feed reserve they have and if it is limited they will do no better than poor or average queens. We sometimes wonder if so-called spring dwindling is nothing more than a lack of feed reserves.

This change in the method of feeding does call for more equipment, as we now winter in three full stories,

and as the colonies are exceptionally strong in the spring they are left in three stories all summer. That is three stories for the queen and the honey supers are above that. Might add, have plenty of honey supers on hand too as these hives will need a lot of them. It takes bees to make honey, and it take honey to make the bees and since we are leaving more honey for winter we have a lot more bees per hive when the honeyflow comes and more honey in the supers when the honeyflow is over. The colony yield is up somewhat over what it was when we ran everything in two stories and then had to do a lot of feeding. There are probably some areas where this will not work but out here it works fine, it's a lot less work, the winter loss is practically nil, and as stated above, the yield per colony is larger.
Nebraska

Two Million Bees Per Site, Perhaps

by ALAN M. FROST

The economics of beekeeping are often discussed and often written about. When we itemize the factors governing a good living for a reasonable amount of labor, perhaps the most important factor in beekeeping is the apiary location. You cannot get a crop of honey without adequate fields of flowering plants or trees within flying range of the bees. It is well to say plunk the bees down where it seems there may be sufficient nectar available to provide a surplus crop of honey, and leave it at that. This may have worked years ago when we had greater acreages of better honey-producing flora. But it is doubtful today in this changing agriculture.

How many hives on a site?

Beekeepers are prone to think that such and such a site has carried so many hives for twenty years without looking to see if there is less acreage of flowers today. Also, generally speaking, colonies are more populous, bees are stronger and work harder.

In my opinion many apiary sites would provide bigger crops if there were less bees on them. Recent research work shows that the best foraging range of the bee is from one-third to one-half mile from the hive. Thus instead of placing eighty hives on one site wouldn't it be better to place two apiaries of forty hives half a mile apart.

It has been said that one acre of clover blossom would yield one hundred and fifty pounds of honey. Proof of this statement seems sketchy and the figure seems high. In an endeavor to arrive at a basis for figuring let us say that fifty pounds of surplus honey can be gathered from one acre of flowers. Under good conditions then, good crop, good weather, etc. we should harvest some thirty-two thousand pounds of honey from six hundred and forty acres, or one hundred and sixty pounds average from two hundred hives. This gives us the reasonable figure of one hive to three acres of flowers. But it is doubtful whether two hundred hives on one site would produce anywhere near as much honey as say six apiaries of thirty-five hives each if equally spaced to cover the same area. Of course the latter sites would have to be chosen to provide necessary shelter, shade, drainage, etc. and be easily

At right, Sweet Clover stands like this one in Northern Alberta are not as common as they used to be. This blooming area could carry some eighty hives in two apiaries.

At left, Jack Read, Alberta Master Bee Farmer, cannot place too many of these big two queen colonies on one site. Therein, headed by Holtzberlein queens, each probably has one hundred thousand bees. Twenty such hives are equal to forty-five average one queen hives.

workable, with access to water. If more than forty hives are placed on one site some of the bees would have to fly outside the recommended range of one-third of a mile.

Condition of flowering plants is important

Before placing an apiary on a site we should look at the crop, see what the moisture intake has been, what type of soil the plants grow in, what type of crop it is, etc. It has been shown that alfalfa planted in rows as far as three feet apart will return the highest seed yields. A reason for this is that bees have easy access to practically every flower. It does not necessarily follow though that such wide planting provides the greatest honeyflow. Too heavy a crop wherein many flowers are hidden under the foliage will not allow bees to gather all the avilable nectar. Where growth is heavy it seems reasonable to assume that too much of the plant's energy will be turned into foliage and that there will be little surplus sugar left in the plant to turn into nectar. An in-between flowering where foliage growth is not too heavy and where bees have access to most of the flowers would seem the most desirable.

Sweet clover has always been rated highly as a honey yielder and beekeepers generally can place more hives on sweet clover stands than any other clover.

Alsike clover, so claim the authorities, will produce some four hundred million florets per acre on a good stand. This crop flowers for about eight weeks and individual florets live approximately one week. This provides fifty million florets at any time during the blooming period. The twelve hundred million alsike florets would (figuratively) produce one hundred and sixty pounds of surplus honey for one hive from three acres.

Consider the honey production per bee

We are actually getting down to honey production per bee and it is here that flying range is important. Longer flights mean less pay loads because of wasted time and wings wearing out more quickly. Just as an illustration, supposing you had six hundred and forty acres of flowers in a half mile strip two miles long. Best results would be obtained by placing three apiaries along one side and two along the opposite side. Don't have the apiaries directly opposite each other.

With Eucalypts and some other trees it is different because flowers extend into the air and the bee range of flight upward as well as on the level has to be considered. Eucalypt flowers are much larger and as a rule secrete nectar more heavily than does ground flora.

Overcrowding is possible today

It has been said in the past that when the honeyflow is on it is impossible to overcrowd bee locations. I cannot agree today, and when placing your apiaries you should consider changing agricultural practices, stronger colonies of bees, and base your placement on the number of hives the location can carry on average years, not bumper years. If possible it is better to be understocked than overstocked.

Better placement of apiaries in the area you now work need not cause trespassing on your neighbors and most likely your crops will improve.

Alan M. Frost,
10509-127 Street,
Edmonton, Alberta, Canada.

A Texas Story

One spring we were working in the honey house at Navasota, Texas, putting in foundation, when Grandma Weaver came in, pulled up a hive body, and started talking:

"Well, I'll tell you all about the time my husband and I went over to our sunset yard to extract honey. In those days we did everything in the bee yard. We got there a little before noon so I fixed a small lunch while Mr. Weaver was staking out the oxen and setting up the extractor and barrel.

"After lunch we went to work. Late in the afternoon, one of those Texas spouts came up and it rained for about two hours. Extracting was over. The oxen were hooked back up and we headed home. We got back to Brushy Creek, it was out everywhere so we just sat there and let it run down. As soon as it was low enough Mr. Weaver started the oxen on and told me to steady the barrel and the 10-gallon can but during the rundown of the water a log had been washed across the road and the oxen were stumbling and the wagon almost turned over so I lost the 10-gallon can. I guess the fish had their fill of honey for supper."

I just wonder how many of us would do such a thing today as they did in the olden days. There is one thing I will bet. Those people had more fun than we do with all of our so-called conveniences. They talked honey, lived honey, and sold honey. Today we seem to be afraid to do those things. In fact, there are many beekeepers who keep bees for their sole livelihood and yet they will not even contribute to the Check-Off Plan for the advertising it brings to our product.

J. E. Davis, Jr.
Navasota, Texas

Rape in Western Canada

Bearing a 1957 date is a 12 page bulletin (publication 1021) of the Canada Department of Agriculture in Ottawa, Ontario entitled "The Production of Rape in Western Canada." It covers soils, varieties (annual) seeding, diseases, crop gathering etc. We assume that the bulletin is free on request to Canadians but suggest that others send 25c.

In this connection the BEE WISE for February of British Columbia reports 550,000 acres of rape in Saskatchewan in 1960. According to J. C. Arrand, Asst. Prov. Apiarist, both types of rape seed yield a light type of oil for which the rape is grown. The Argentine is fairly tall growing and susceptible to spring frost; the Polish types are shorter, mature probably three weeks earlier and are not so prone to freezing. The yellow flowering rape is very attractive to bees, and actually pulls the bees from other flowers, thus making for heavy seed setting.

Drawbacks are that there is a very active problem from insecticides and therefore the seed grower as well as the beekeeper should be anxious to protect from poisoning. Spraying while the rape is in pod does reduce the danger and loss.

Another problem is the rapidity with which the honey from rape granulates. Perhaps it may be compared to a point with the rapidly granulating of heather. Rape (the annual) thrives best with ample moisture.

Honey Price Support Operations

According to the Commodity Stabilization Service of U.S.D.A. as of Jan. 31, loans were made on the 1960 crop of honey to the amount of 1,055,175 pounds. There were still outstanding loans on 894,410 pounds valued at $85,040. Florida still ranked first in loans with half a million pounds with Texas, Minnesota, and Arizona following in order, each with less than 200,000 pounds. The largest total of loans on honey came in 1958 with almost 12 million pounds.

Honey Marketing

Plan for the Interstate Marketing Committee

by C. D. FLOYD and GLEN McCOY

This is a self-help program.

We have been forced to conclude that we cannot expect anything more than stopgap aid by way of government assistance.

If we want to meet our problems head-on, and do something constructive about them, it is necessary for us to begin by saying that our industry must lift itself by its own bootstraps. Only we ourselves have the essential interest in our problems to insure an active program for our betterment.

To achieve such betterment of market conditions, we offer the following plan for the consideration of our members:

This plan begins by predicating that any national marketing program should be carried out by vigorous pursuit at the state level, or it will never get anywhere.

Our attempts to reach all the way down from the top level of the Federation, to the individual beekeeper members involved, have proved ineffectual even with direct correspondence to them in the form of our News-Letter. We know the members have been kept informed of our movements. But securing their active cooperation seems to demand a sparkplug motivation from neareerby, and this pressure should come from the various state organizations.

We believe that capable people within each state must adopt and shoulder the responsibility of energizing and putting into effect a honey marketing program, which will answer its own peculiar needs, and at the same time, dovetail with the essential portions of the overall Federation objectives.

Now the critical need in any market improvement program is the development of workable ideas. Such ideas will not just leap at us out of the atmosphere. But we have plenty of active thinkers amongst our members in the various states. We think that every state, working through its constituted marketing committee, should set up what we might call a "marketing workshop." To effect this, the committee of the state should conscientiously recognize that it is shaping and putting into effect its own state program; having realized this, the committee should meet for not less than one-half day, at least once a year, at an appropriate time, so that they may pool their ideas for their state program.

And once each year all states cooperating in the effort, should be represented at a national conclave, where marketing ideas originated in the states can be pooled collectively for the development of a national program.

At this national meeting, states within regional areas possessing common problems, should meet together in several auxiliary workshops, to develop essential regional objectives.

While it is true that any plan for honey market improvement must affect the entire yearly national pool, it is also true that the American Beekeeping Federation, properly viewed, is an advisory and coordinating body. The Federation can draw ideas together for market improvement, but the real burden of proof for carrying out a marketing program rests squarely on the shoulders of the individual states. Hence, if participation in the states is not along the lines of an active, strong, and conscientious effort, we will not get the program off the ground.

We need what amounts to an interstate marketing council, and in this council, it is absoluetly essential that we have suitable state representation. We want an "ideas' conclave," in which every state puts forward its best plan, and after which, all work together to develop a program that will mean general improvement of honey market conditions.

We want to emphasize that this suggested plan of a marketing council (or workshop) makes direct use of the state marketing committees. If no such committee exists in a state it should be the prime responsibility of the state association, to designate a committee, but in so designating, the association should understand clearly that a figurehead committee would be worthless. It should be a working committee; and if persons so chosen do not expect to work, they should decline appointment. It is, of course, here assumed that such representatives would be Federation members, so that results achieved in the state marketing consultations can be further reflected in the national marketing council. Furthermore, these representatives of the various state marketing committees, should be pledged faithfully to attend every annual marketing workshop, at least to the extent of one responsible member from each state, not less.

This program will come up with solutions to our honey marketing problems. Year by year, ideas will come forth from the national meetings, for recommended use over the nation.

Our continuing need will be to find these ideas.

Canadian Beekeeping Council Active

The Canadian Beekeeping Council is quite active in its efforts for beekeepers. The council is supported by a voluntary subscription by members or co-operatives of 1/10c per pound on their honey. Mr. Mesley, president of the Council was expedited to the British Isles in an effort to find honey markets, came back quite encouraged. The Council also advertises honey, uses the publicity also of the American Honey Institute. Their efforts have lately been directed to avoiding for the beekeepers insecticide losses, which is more and more becoming a problem everywhere. The council also supports scientific efforts to place a value on royal jelly, and to effect a better bee by encouraging the importation of honey bee eggs and larvae for breeding purposes.

Honey Loans

The U.S.D.A. reports that as of Dec. 31, 1960 there was a total of 31 loans outstanding on honey amounting to a total of 901,175 pounds. Of this Florida had more in loans outstanding than all the rest of the states; loans to 17 with a total of 486,420 pounds.

Total of loans outstanding are less in total pounds than in any previous year of the loan program at the same date.

Bee Diseases in Massachusetts

Report of the Inspector for Massachusetts indicates that the percentage of American foulbrood disease has fallen to just slightly over two per cent. Between five and six thousand colonies were inspected during 1960 with a total of 1503 visits.

Industry

Honey Support Price Set At 11.2 for 1961

We append below a statement from Secretary Freeman which is self explanatory. Whether the additional support price will have any effect on the market remains to be seen. It would be our opinion, however, that inasmuch as beekeepers have all along been able to sell above the support price that they will remain as active or even more active than they have been during the past few years in getting their honey sold without having finally to place it under the support price.

We have been confronted late this marketing season with the competition of Argentine honey which has come in to the United States in competition with our very best white honeys inasmuch as Argentina is now producing honey from similar plants as ours and honey of a similar quality.

It appears that the first importations were made because there seemed to be a scarcity of good white honey to last out the season. The Argentine purchases were made and were found to be acceptable and as a result it has, indeed, weakened the market over the last two or three months of the marketing season.

It is our idea that perhaps some few beekeepers abetted this effort by holding their honey clear above what the usual market was, in other words at 15 cents a pound or more, and thus gained some of the enmity of the honey packers.

In any case the honey packers now having tried the honey, it is doubtful whether they will "back down" unless the market is sufficient from year to year to absorb all of our own honey at our own favorable prices.

Secretary of Agriculture Orville L. Freeman today announced a 1961 honey support price at a national average of 11.2 cents a pound. This reflects 75 per cent of the March 1961 parity price adjusted to a 60-pound container basis. The 1961-crop honey support price is 2.2 cents per pound higher than the support price recommended in the 1961-62 budget prepared by the previous administration.

In announcing this support price, Secretary Freeman stated:

"The 1961 honey support level is more realistic in relation to market prices which in 1960 averaged about 91 per cent of parity.

"Support loans on honey provide the very important function of offering interim financing for some 200,000 beekeepers to assist them to market their crop in an orderly manner. The cost of this program to the Commodity Credit Corporation during the past decade has been negligible. At the same time, the program has provided market stability to producers.

"This lends encouragement to maintain the populations of bees which are vital for the pollination of important seed, vegetable and fruit crops. Beekeepers receive little remuneration for this function, with most of their income resulting from the by-product of pollination and honey.

"Honey is an important source of sweetening and consumption has been climbing in recent years."

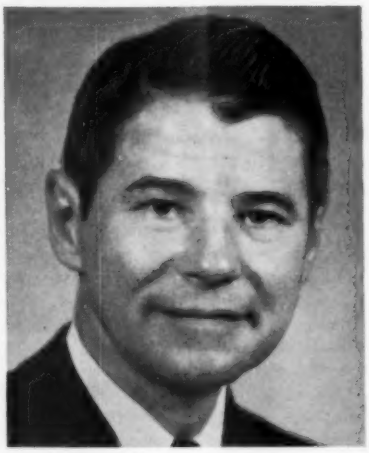
The honey price-support program is authorized by the Agricultural Act of 1949 at a level between 60 and 90 per cent of parity. The 1960 - crop national average honey support price was 8.6 cents per pound reflecting 60% of parity.

The support price announced now applies to honey marketing during the 1961 season which begins April 1.
U.S.D.A.—March 30

Final 1960 Crop Report

The U.S.D.A. has just released final results on the crop report for the 1960 season. It amounts to 260 million pounds or some 7 million pounds more than their estimate in the late fall. The crop as now reported is 5 per cent more than the 1959 crop and 9 per cent more than the '54-'58 average.

Earlier estimates gave Minnesota as first in production. This has now been revised and California stands first, ahead of Minnesota, with Florida, Wisconsin, Texas, New York,



Secretary of Agriculture Orville Freeman.

Ohio, Michigan, Indiana and Iowa following in order.

There was a 13 per cent drop in production in the West North Central States and 7 per cent in East North Central. South Atlantic States did best with a 28 per cent increase over 1959; Western Regions 21 per cent and 13 per cent in South Central and 10 per cent in North Atlantic. California although below average had double the production of 1959. The Texas yield was second highest of record and New York highest since 1945.

Institute Publicity

We are receiving many requests for literature because of an article in the Los Angeles Examiner. Good Housekeeping had a colored picture and recipe for Strufoli in the December issue. The recipe calls for a half pound of honey. McCall's Magazine had a number of honey recipes and so did the Ladies Home Journal. Suburbia, published in Chicago, had a beautiful colored picture with a recipe for Honey Fruit Cake. Family Weekly Magazine had Lebkuchen (Honey Cakes) calling for a half cup of honey, Family Circle Magazine had a number of honey recipes among which was a recipe for Golden Good Wheat Bread also calling for a half cup of honey. Woman's Day Magazine had Honey Glazed Apples using a half cup of honey and Cranberry Relish.
American Honey Institute
Madison 3, Wisconsin

— Science in Apiculture —

EDITOR — DR. WALTER C. ROTHENBUHLER

Observations On The Acarapis Mites Of Honey Bees

J. E. ECKERT,
University of California

Introduction:

The discovery of three acarapis mites on some bees shipped from the United States to Brisbane, Australia, in 1959, opened the question as to the relationship of these mites to the general welfare of the bees infested and to the beekeeping industry in general. The fact that the mites were first identified as those that cause the Isle of Wight disease, or the acarine disease of bees, caused quite a flurry among the regulatory authorities and the research workers in beekeeping in this country. Since the bees were shipped from California, the brunt of the investigation fell on the State Department of Agriculture and our laboratory in the University of California.

Thousands of man-hours were spent in attempting to find specimens of *Acarapis woodi*, the internal acarapis mite that causes the acarine disease of bees in Europe but with entirely negative results. Then an acarapis mite was discovered in our laboratory on bees from our own experimental colonies, and interest picked up. Soon external mites were found by the examination of individual bees and these were compared with descriptions of similar mites previously found in Europe and were found to be identical with *A. dorsalis* and *A externus**. The search spread to Canada and to other portions of the United States and external mites were found in British Columbia, Alberta, and Ontario, Canada; and in California, Connecticut, Georgia, Hawaii, Idaho, Louisiana, Maryland, Massachusetts, Minnesota, Mississippi, and Utah,—all without any trace of *A. woodi*.

* The mites originally found on the bees shipped to Brisbane were later identified as "morphologically similar" to *A. dorsalis* specimens sent to England for comparison.

Review of the literature: Time and space will not permit a summary of all that has been published on acarine mites as the bee literature contains scores of articles and references on the subject. A beekeeper by the name of Cooper was the first to report in 1903 a "disease" of bees that took a heavy toll of his colonies during the summer and autumn. Similar symptoms were found in England in 1909-1910 and, since Cooper lived on the Isle of Wight, the "disease" became known as the Isle of Wight disease.

Rennie and his associates discovered in 1921, internal mites in many of the bees in apiaries on the Isle of Wight and the opinion grew that the mites were the cause of the ailment. However, Dr. Rennie stated that the Isle of Wight disease obviously covered many maladies of bees and that the continuation of the name was not justified. In good honey years, both in the Isle of Wight and in England, the colonies prospered and no evidence of the disease could be found in apiaries seriously affected in poor honey years.

Dr. Rennie found that the infestation of a colony by the internal mites did not always result in the death of the colony or in a reduction of its production. In fact, he stated that it was difficult to prove that the mite shortened the life of the infested bee by more than a few days. Morgenthaler found that only one colony out

TABLE 1: MEASUREMENTS OF ACARAPIS MITES OF THE HONEY BEE (in microns)

Sex of Adult	Characters Measured	Means ± confidence limits at 1% level		
		A. dorsalis	A. externus	A. woodi
Female	Length of body	123.90±5.9617	126.55±4.1224	115.70±5.6113
Female	Width of body	63.05±4.4200	74.30±5.3604	69.95±3.1511
Male	Length of body	150.80±2.7557	169.56±4.1064	150.65±6.0935
Male	Width of body	80.60±3.6324	105.13±3.8832	85.63±3.7289
Male	Length of 2 last segments of hind legs	6.795±0.2392	11.390±0.2938	6.8183±0.2866
Male	Distance between spiracles	16.260±0.4178	16.936±0.8331	14.270±0.5052

Discussion: **Acarapis externus** measurements are significantly larger than those of similar parts for **dorsalis** or **woodi**, the length of the last two segments of the hind legs of the female being particularly striking. The greater distance between the spiracles of **dorsalis** over **woodi** is helpful in differentiating these two species.

TABLE 2: SIZE OF EXTERNAL MITE BROOD STAGES (in microns)

Stage	Means ± confidence limits at 1% level			
	Length		Width	
	A. dorsalis	A. externus	A. dorsalis	A. externus
Egg	134.7548±2.3280	144.6667±2.6100	51.6272±1.3797	58.2121±2.1937
Larva at hatching	142.8553±4.2013	143.2917±6.4658	53.1842±2.1814	57.7083±6.3229
Larva at 1st moult	172.00±5.7208	187.0778±6.4880	67.7093±3.7090	84.9444±5.8679
Nymph (male)	163.250±5.5655	171.9000±7.5582	80.5000±3.0819	96.2000±5.4345
Nymph (female)	128.8947±5.9747	137.7222±5.6714	64.1579±3.9524	76.7778±3.6486

Discussion: Again, the measurements of **externus** are significantly larger than those of **dorsalis**, with the exception of the length of the larva at the time of **hatching**.

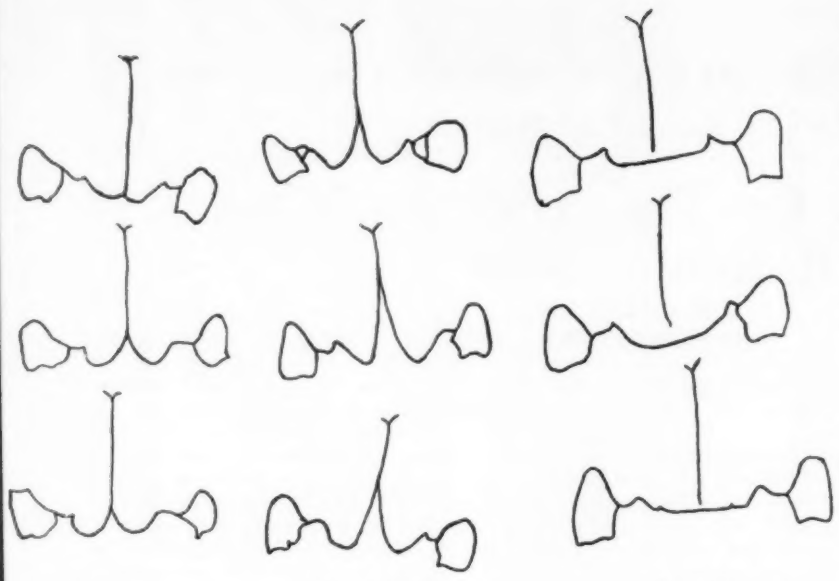


Figure 1. Sketches of the ventral plate between the fourth coxal segments of the female A. woodi, A. dorsalis and A. externus.

of 100 infested with A. woodi died from what could be determined as acarine disease. Bailey, of Rothamsted, recently verified these findings.

External mites were first found in samples of bees from Quebec, Canada, in 1926 and from a sample from New York in 1930. Both were identified by Brugger as *A. dorsalis.* The external mites were also reported by the same research worker from nineteen other countries, in many of which the presence of *A. woodi* had never been found.

The Quarantine Against the Introduction of Bees: The United States and Canada passed quarantine laws against the importation of queens and honey bees without permits in 1923 to forestall the importation of *A. woodi,* the exception being that honey bees could be exchanged between the two countries. In any imported shipment, the attendant bees were inspected officially by the quarantine authorities and if found free of acarine mites or other diseases, the queens were released to the importer. In 1947 the law was strengthened so that even the U. S. Bee Culture Laboratory could not import bees for experimental purposes, apparently on the ground that queen bees could be a source of spread of the internal mite. Canada has the same provision. This law applies even to shipments of bees and queens from countries where *A. woodi* has never been found.

So, in view of the finding of external mites so widely spread throughout Canada and the United States as well as in at least 19 other countries of the world,* one has to assume that the external mites had been present in our bees many years before 1923 when the first quarantine laws were established. It is highly probable that these mites will be found in other states and provinces as soon as the research workers or regulatory authorities will take time to make the necessary survey.

Morphological and Ecological Characteristics of Acarapis Mites: Morgenthaler, Morison and Schneider discovered and described three external mites which they considered different enough in their physical characters and in their ecological characteristics to constitute distinct species. These were called *A. dorsalis, A. externus* and *A. vagans.* The writer has been able to compare specimens of *dorsalis* and *externus* with specimens of *A. woodi* received from Switzerland and from England.

Measurements were made of the distance between the two spiracles on the female mites, and the length of the last two coxal segments of the hind legs, as well as of the eggs, larvae, nymphs, and sizes of the adults. These measurements are given in Tables 1 and 2. Briefly, the measurements indicate that *A. externus* is significantly larger than *A. woodi* or *A. dorsalis* and can be readily distinguished from the other two by the greater length of the last two segments of the hind legs of the females. It is more difficult to distinguish *A. dorsalis* from *A. woodi,* and since the differences are variable within the species, it is generally necessary to compare more than one of the characteristics listed before arriving at a definite conclusion. Baker found still another character that can be used in identifying the different mites, as he noted the ventral segments between the fourth coxae of the females were obviously different. These are illustrated in Figure 1.

While *A. woodi* usually is found in the tracheae of the prothorax, the mites have also been found to feed externally near the bases of the wings. *A. externus* is generally found at the side or on the ventral portion of the neck. The females fasten their eggs and larvae to their host with a mucilaginous substance that is not characteristic of the other species. They are also found in the posterior tentorial pits and occasionally migrating from bee to bee. *A. dorsalis* is generally found in all stages anterior to the scutoscutellar groove located on the dorsal portion of the thorax. However, external mites are also found occasionally on the propodeum, anterior segment of the abdomen, on the wings and near the bases of the wings. The writer has found eggs, larvae and adults in such places but their measurements are identical with those of *A. externus* or *A. dorsalis.* It is probable that gravid females lay their eggs in such places from force of circumstance while seeking their natural breeding places on the neck or dorsal portion of the thorax.

Some Biological Observations: Most investigators have discovered that all forms of the mites prefer to infest young bees. *A. woodi* cannot infest bees that are older than 12 days and prefer still younger bees. In this study, both external mites were attracted to young bees as is indicated in Figures 2 and 3. These data also indicate that the egg stage is four days, the larval stage is four days, then a nymphal stage of one to three days with the males emerging before the females. It is probable that the mites can complete two cycles before the bees become fielders in a normal colony. The female mites lay a majority of their eggs on bees that are from one to eight days old. While field bees have been found infested with mites, the number of brood stages are considerably lower than the number found on younger hive bees.

* External mites have recently been found in New Zealand and in Queensland, Australia.

The distribution of the stages of external mites per bee is shown in Figure 4. A majority of the infested bees carry only one or two forms, 31% having but one egg, larva or adult and 25% were found with two stages, while 26% were infested with four or more stages. It was rare to find bees with seven or more stages of the mite. In one colony infested with both external mites 52% of the bees infested with *A. externus* were also infested with *A. dorsalis*.

The number of eggs laid by the two external mites could not be determined as the gravid females migrate from bee to bee. It is probable that each female lays from two to five eggs and that a greater number of eggs or larvae found on any mite is the result of two or more females. Frequently, a young larva was found in a cluster of three or four eggs of either *A. externus* or *A. dorsalis*. Figure 5 shows the size of the egg in relation to the adult *A. dorsalis*, and illustrates why the acarapis mites lay but a few eggs over a period of several days.

The seasonal infestation of acarapis mites in three colonies is given in Figure 6. One of the colonies was infested with both mites while the two others were infested with *A. dorsalis*. All stages of brood were found on samples of bees throughout the year, with a smaller number of brood during the colder portions of the year (when the younger bees were less numerous). In a series of 68 samples consisting of 4,078 bees from 65 colonies, 619 or 15.1% were infested with *A. dorsalis;* 34 samples of 2,100 bees showed an infestation of 20.7% of *A. externus*. The highest infestation in any colony was 68% with *A. externus* and 52% with *A. dorsalis*.

Sixty-six queens, of varying ages, some from colonies known to be infested with either one or both of the external mites, were examined but none were found infested with either mite. Young drones were found infested but to a lesser extent than the young worker bees.

Many bees infested with one or both of the external mites were dissected and examined for *A. woodi* without any trace of internal mites or injury being found in the tracheae.

Both male and female external mites migrate from one bee to another and apparently migrate soon after they emerge from the nymphal case. There is no evidence that the larvae migrate or move far from their "pads." There is no active nymph as it is formed within the last larval skin. The male emerges a day or more before the female. It was not observed as to when the newly emerged females mated or started to lay. Most of the young adults contained a dark spot in the posterior portion of the abdomen and this was carried over from the nymphal form. This spot generally disappeared as the adults grew older and was seldom seen in gravid females.

How the Mites Feed. According to Hirschfelder and Sachs, the larvae and adults have piercing mouth-parts that are capable of piercing the chitin

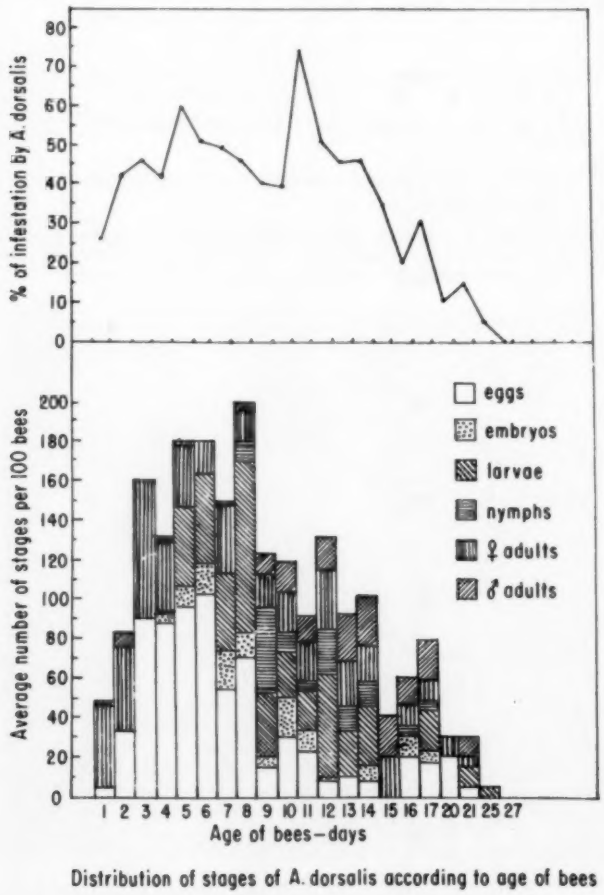


Figure 2. Distribution of stages of A. dorsalis according to age of bees, in days; also, the per cent of infestation of the same samples.

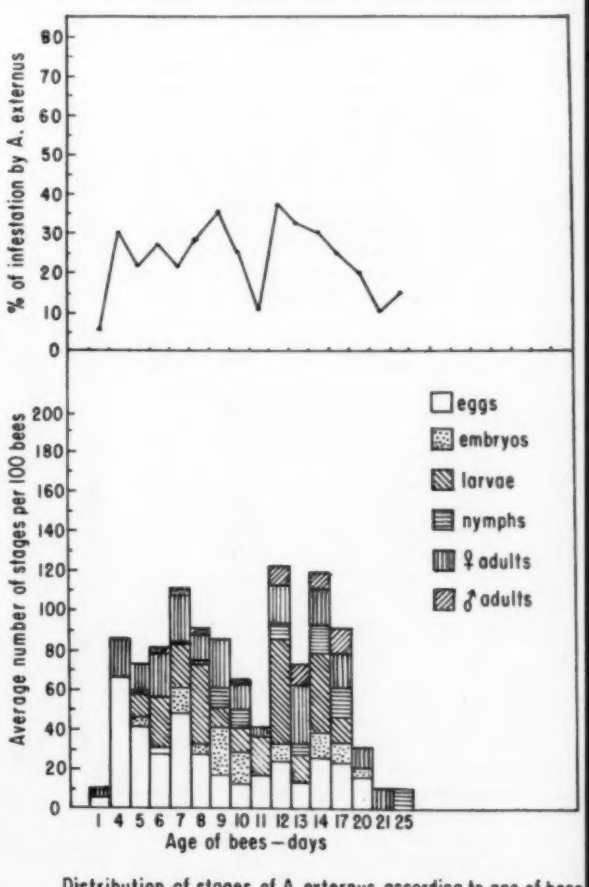


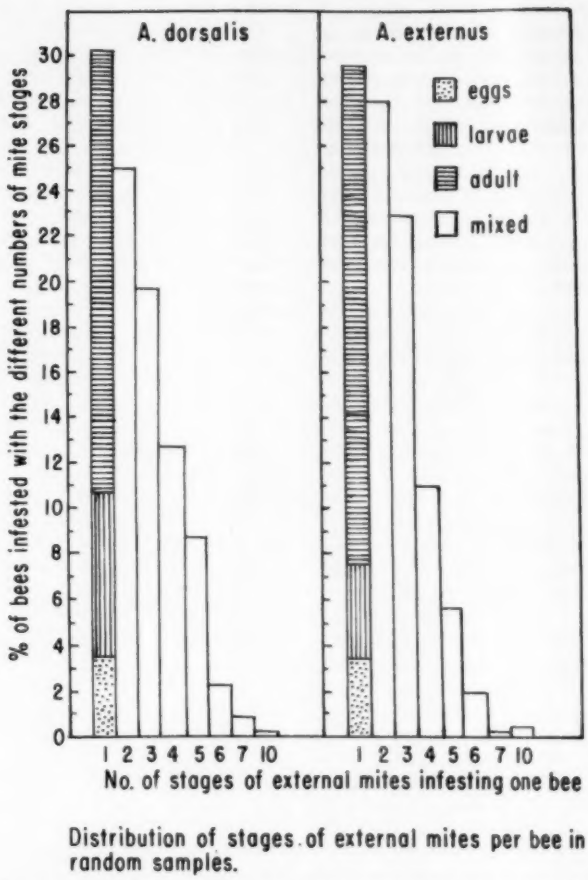
Figure 3. Same data for A. externus.

of the bee. The mouth is then applied to the opening and the blood is sucked up into the pharynx through a short stiff tube. The overall effect of this feeding on the bee is hard to evaluate but there is no evidence that the mites inject any toxin during the feeding process. Some European researchers believe that mites feeding at the bases of the wings cause the wing muscles to become inoperative, thus promoting the crawling of bees in front of their hives. No such symptom was observed by the writer.

Economic Importance of External Acarine Mites: Since these external mites obviously have been present in this country for many years without being detected and without any external symptom of their presence being observed, they cannot be of any great importance to the welfare of the individual bee or to the economy of the hive. One of the closely observed colonies in the present study was infested with both *A. dorsalis* and *A. externus* to a greater extent than in any other colony. The queen was artificially inseminated and evidently her bees had a susceptibility to "paralysis" for this "disease" developed during the latter part of the second summer and depleted the colony to the extent of 100 to 250 bees a day. By the middle of January 1961, the colony had dwindled to just a handful of bees, with the queen intact and uninfested, and was then killed. However, it had wintered successfully the previous winter, had built up to a four-story colony that made three full supers of honey and winter stores. The bees were not infected with Nosema but apparently developed the symptoms of a paralytic condition together with dysentery. While the mites could not have caused any beneficial results, the dying bees were infested to approximately the same extent as random samples. Further, other colonies infested with one or both of the external mites did not lose an abnormal number of bees nor did they exhibit any external symptoms of having an infestation of mites.

While queens could become infested, none of those examined were infested with either form of mite. Since the mites are attracted mainly to young bees, a mated queen would soon become unattractive to both the internal and external mites and for this reason would not be a major source of spreading the acarapis mites.

Control: Little is known about the control of external mites. Our observation has been that they are more



Distribution of stages of external mites per bee in random samples.

Figure 4. The distribution of stages of external mites per bee in random samples. The first column of A. dorsalis indicates that 3.7% of the bees were infested with one egg, 7.25% with one larva, and 19.30% with one adult by the end of the first day.

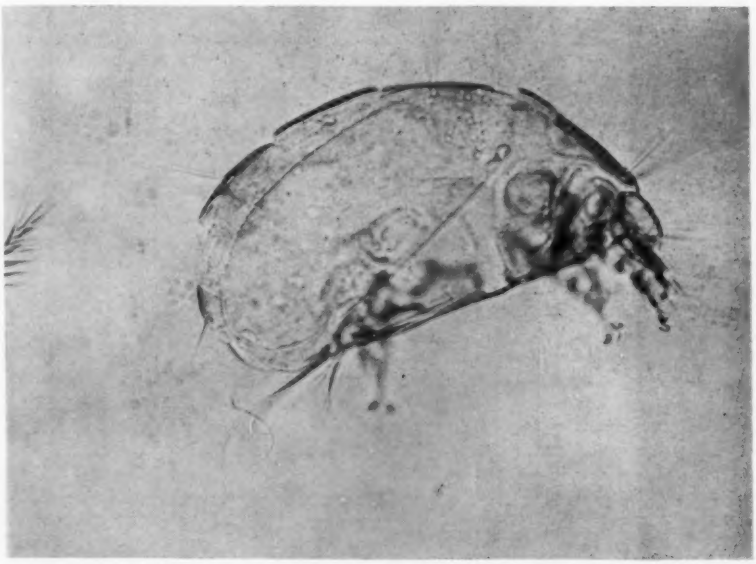


Figure 5. A photomicrograph of A. dorsalis female with egg.
The size of the egg of acarapis mites is quite large in relation to the body and is an obvious factor in the small number of eggs laid by any one individual and a limiting factor in the increase of mites in an infested colony.

resistant to carbon dioxide and cyanide than are the bees as the mites recover before the infested bees exposed to sublethal doses of these gases. The mites migrate from bee to bee, lay their eggs only on bees and die within an hour or so after the bee dies. The parts of the hive would not be a source of spreading mites between colonies. Drifting bees during orientation flights, and the transfer of bees from one hive to another would be the main source of spreading these parasites between colonies of bees.

Efforts will be made to find a direct source of control through the use of fumigants that are not injurious to bees or brood of bees.

Acknowledgement: A portion of the samples were examined by Miss Heinke Pingel, technician from Germany and the data were analyzed statistically by Dr. Mohamed El-Banbi, of Egypt, both visiting students at Davis.

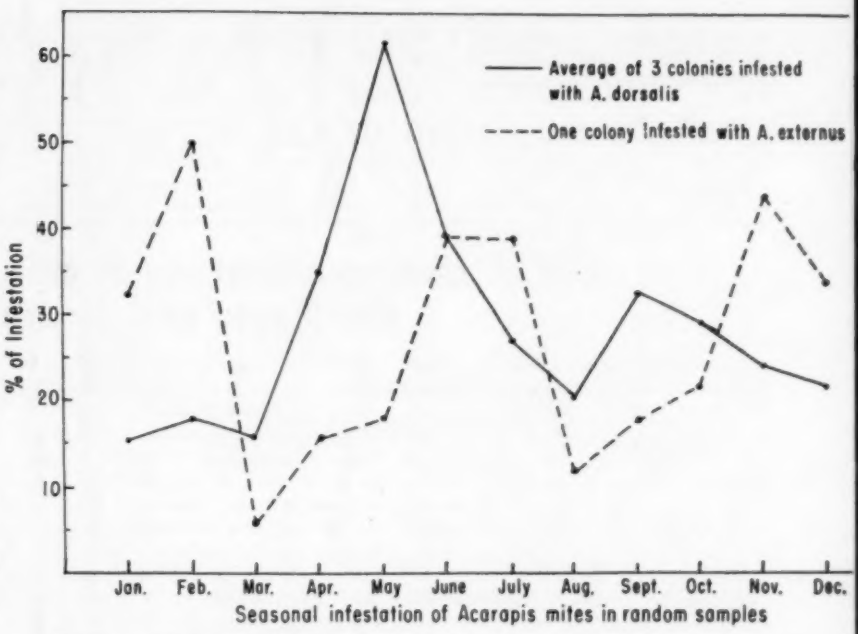


Figure 6. The seasonal infestation of Acarapis mites in random samples. (The curves would probably be less abrupt if more colonies were included in each line.)

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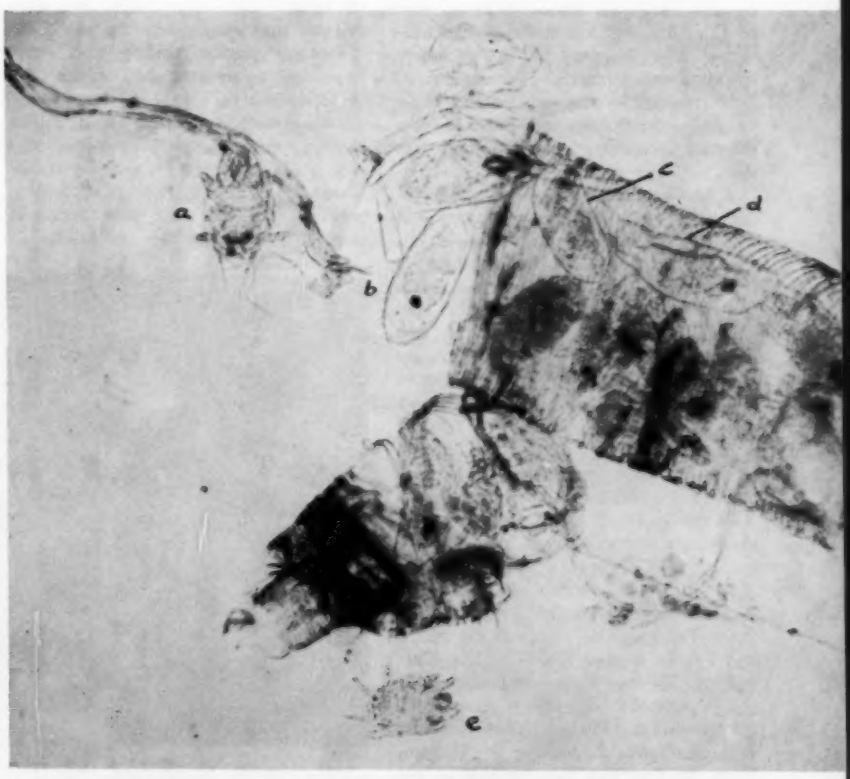

Figure 7. A photomicrograph of a trachea infested with A. woodi, showing the discolored trachea with all stages of the brood and adults; a, female mite with spot; b, nymph with dark spot; c, egg; d, larva about to change into a nymph; e, male mite.

number of mites (Acarapis woodi) found in the tracheae of the honeybee. B. W. 12(7):74-76. (c) An acarapis living externally on the honeybee. B. W. 12(10): 110-111.

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USDA Honors Scientists Heading Research On Maple and Honey

Outstanding research on two sugar products, honey and maple, has won awards of $300 each for Dr. Jonathan W. White, Jr. and Dr. C. O. Willits, U. S. Department of Agriculture chemists. Both are members of the staff of the Agricultural Research Service's Eastern Utilization Research and Development Division in Wyndmoor, Pa. (near Philadelphia).

Dr. White recently completed an exhaustive study of all important types of U. S. honeys, and the analytical results he obtained are being prepared for publication in a USDA bulletin. He also supervised contract research conducted at Kansas State University on the use of honey in commercial and home baking, and at the Philadelphia College of Pharmacy and Science on the use of honey in pharmaceuticals. The results of this research are of considerable value in expanding uses for honey, a product presently under price support.

As an associate referee for the Association of Official Agricultural Chemists, Dr. White developed entirely new methods for evaluating honey for sugars, acidity, and adulteration with corn sirup. He also worked in conjunction with the Bee Industries Association and the Honey Industry Council to develop a test to detect the admixture of mineral wax with beeswax. Dr. White formed study groups at Cornell and Pennsylvania State Universities to ensure that food additive regulations are not violated by the possible carry-over of the drugs and chemicals used in producing honey into the final product.

Dr. White, a native of Bellefonte, Pa., is a graduate of Pennsylvania State College, and received his M. S. and Ph. D. degree from Purdue University. He has been associated with the Wyndmoor laboratory since 1942. He lives at 2 Atkinson Lane, Ambler, with his wife, and their 2 children.

Dr. Willits has been active in research on maple sap and sirup for many years. His laboratory studies, coupled with a vigorous campaign to bring the results of his research directly to maple farmers, have been in large part responsible for the fact that the percentage of the U. S. crop of sirup that is top grade has increased in recent years from 50 to 80. He has long stressed that sanitation in sap gathering and sirup making is vital to quality. Now contract research conducted at Michigan State University under Dr. Willits' supervision has indicated the possibility of obtaining at least twice as much sap from the tree by sterilizing the taphole. This is because premature stoppage of tapholes is a result, not of the drying up of the hole, as once thought, but by microorganism growth that chokes off the sap flow.

Use of plastic tubing and other improved equipment has given rise to the central evaporation plant, whose development Dr. Willits has strongly encouraged. This means that sap can be collected from many farms whose owners do not have sirup-making facilities and sold for processing into sirup by specialists in this operation. Thus more sirup will be made and the quality will be improved. Dr. Willits has contributed to this trend by developing standards for the evaluation of maple sap, which is now being sold for the first time as a raw material.

Dr. Willits was honored last year as the recipient of the U. S. Department of Agriculture's Superior Service Award, and in 1954 a research team he headed received this award for the development of a process for intensifying the flavor of maple sirup.

A native of Groton, South Dakota, Dr. Willits is a graduate of Huron College. He received his M. S. and Ph.D. degrees from Cornell University. He is president of the Association of Official Agricultural Chemists, a member of the Can Committee on Sugar Analysis, an advisor to the Vermont Department of Agriculture on maple legislation, and a technical advisor to the National Maple Sirup Council. He lives with his wife at 216 Station Avenue, Northwoods, Glenside, Pa.

Dr. Jonathan W. White, Jr. (left), U. S. Department of Agriculture chemist who heads utilization research on honey, receives $300 award for his work from Dr. P. A. Wells, Director of the Agricultural Research Service's Eastern Utilization Research and Development Division, Wyndmoor, Pa.

Let's go to this happy picture of Pat again. Just can't use that sad picture you saw last month. Know why? She has a brand new baby girl born March 21st. So she has been as busy as a cranberry merchant. The other kids had measles before the new baby came. But faithful Pat came in with her copy for May just the same. What a girl!

Fun For The Family

Editor— Pat Diehnelt

Rt. 1, N83, W13799, Fond du Lac Ave.
Menomonee Falls, Wisconsin

SCRAMBLES
CROSSWORD PUZZLES
PRIZE RECIPES

THE APRIL SCRAMBLE ANSWER

Nothing is so like a soul as a bee. It goes from flower to flower as a soul from star to star and it gathers honey as a soul gathers light — Victor Hugo

MAY SCRAMBLE

I og ot urenat dan ot ooksb sa a ebe sgoe ot het orf a artenc erowfl I nac otni ym kema now yhone

The June winner in the recipe contest is Mrs. Robert W. Stallings, Rt. 5, Box 334, Fairfax, Virginia. There were also some good runners-up. This month however there is only room for this one page so the recipes will have to wait to be published. Scramble winners for March "Pedigree of Honey" were Mrs. Stallings; Roger Topping, South Edmonton, Alberta; Mrs. D. G. Greenler, Oregon, Ohio; and Jewel McGhee, Corsicana, Texas.

MAY

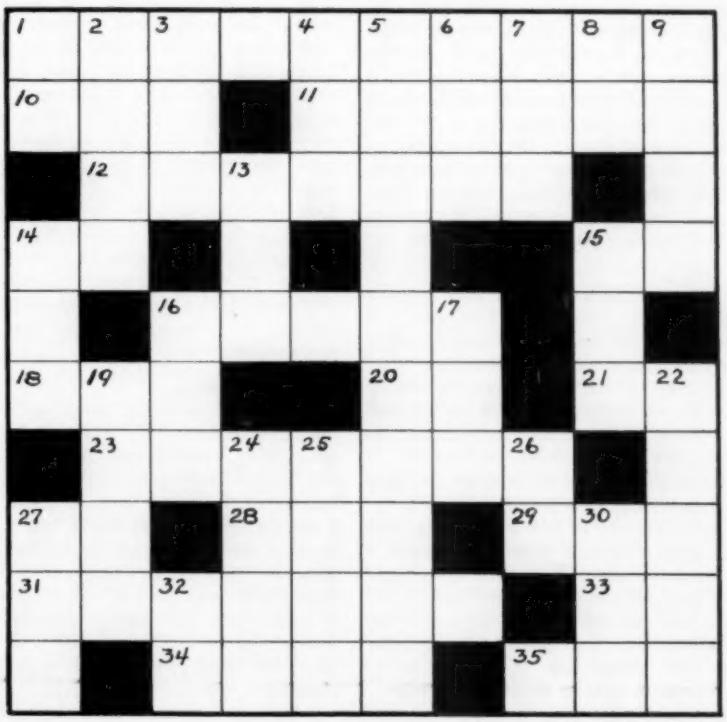
CROSSWORD PUZZLE

ACROSS

1. Orchard planting scheme
10. Also
11. . . . . bees near nectar sources
12. Honey bees increase seed set of . . . . . .
14. Interjection
15. Board of Trade (Abbr.)
16. Much . . . is pollinated by bees
18. Period of time
20. Sodium (Symbol)
21. Each (Abbr.)
23. Grove which pleases bees
27. Because
28. Letters standing for "individual or team"
29. Put to service
31. . . . influences flight of bees
33. Letters standing for "every nucleus"
34. Results of pollination
35. Seventh Greek letter

DOWN

1. Pronoun
2. Biblical person who must have kept bees
3. Sanskrit school
4. Letters standing for "real lovable animal"
5. Fertilized
6. Letters standing for "love clover farms."
7. Amateur Athletic Association (Abbr.)
8. Net ton (Abbr.)
9. Assay
13. Fine animal hair
14. be
15. Fruit's friend
16. More distant of the two.
17. Sailor
19. Thorny flowering shrub
22. First man to recognize insects as pollinators
24. Quote
25. An Assiniboin
26. Dutch (Abbr.)
27. Tool for punching holes
30. Fruit . . . . . .
32. Because



Your Questions Answered

EDITOR— **W. W. Clarke, Jr.**
204 Ag. Ed. Building
Penn. State University
University Park, Pa.

• *Question from*
M. G. Caseg
Seattle, Washington

I have been an amateur 17 years, but here is a problem that has me puzzled. Last year I received a queen for requeening from a firm advertised in the Journal. The colony came through the winter in good condition but seemed slow in spring build-up. When a second hive body seemed nearly full in early May I added a third super with foundation for chunk honey but the colony just did not increase any more. On June 25th, although there was plenty of brood in both bodies and the same queen, there was scarcely two supers with bees. The weather has been quite cold.

Answer

I wish there were an easy answer as to why a colony of bees does not store more honey. Several factors which may be responsible are:

1. Cold weather. Flowers probably do not secrete as much nectar and bees certainly do not gather as much during cold weather.
2. Disease, such as Nosema, affects the adult bee population.
3. Queens. It is not necessarily true that a young queen is always a good queen. Check her brood pattern, it should be uniform.
4. Not all strains of bees are industrious, just the same as people.
5. Hive population. It takes a lot of bees to gather a crop of honey.
6. Insecticides may be poisoning the bees to keep down the field force.

Any of the above factors or a combination of them may be causing your trouble.

• *Question from*
Dr. G. Arthur McLellan
Sparta, New Jersey

In your Penn. State course on bees you recommend to discourage swarming, placing the queen in the bottom brood chamber, removing all but one frame of brood, replacing with empty frame foundation, after destroying all queen cells and putting an excluder over the chamber. Do you recommend confining the queen to this space indefinitely or opening up the super above with excluder above this? It has been my practice to use a double brood chamber with excluder to keep brood and pollen out of my upper supers. This may account for the tendency to swarm with which I am bothered but I still prefer my honey uncontaminated with brood and pollen.

This means of controlling swarming is certainly superior to the Demaree method for simplicity and has worked very well for me.

Answer

There, unfortunately, is no one answer to your question regarding confinement of the queen. In my own beekeeping practice, the queen is not confined at any time. I believe there is some merit to confining the queen when the main honeyflow starts. However, she probably should be given more space at the end of the honeyflow in order to build up the colony for the fall flow.

Actually, this system is a modification of the Demaree system of swarm control and should be of some value.

• *Question from*
Elmer Briley, Jr.
Coffeyville, Kansas

(1) I took the honey from my bees about three weeks ago (last of July) when they were strong. A few days ago I inspected them and the colony was small. I saw no queen cell and so I cannot figure what made them reduce in size. (2) Could you give me some information on these plants for type, flavor and color of honey? Anise hyssop, vitex. Does trefoil make good honey? It would have value, if it does, for honey, hay, and grazing.

Answer

I hope you did not "rob" your bees, but merely removed the surplus honey. Why the colony was smaller would be difficult to explain. Swarming, poisoning, disease, or robbing might be some of the things that could cause the condition.

Anise hyssop is reported to produce a very light-colored honey with a mild and elusive flavor.

Vitex is often reported as a good honey plant but I do not know a thing about the honey produced from it. I doubt if a surplus has been harvested because of insufficient quantities of plants in a given area.

Trefoil is also reported to be an excellent honey plant. The honey is light in color with a good flavor. We use trefoil for hay and pasture, but it does not seem to yield much nectar in our area. Vermont, New York, and several other states report it as a very good honey-producing plant.

• *Question from*
L.E.T. Stark Co.
Canton, Ohio

We have three colonies. Last year they made plenty of honey. This year one colony is making some. The other two are making none, yet they have many bees. They even hang on the outside. In early spring we fed them well with syrup until the tree blossoms came and they were in fine condition. Why do the two hives not work? Why do the bees just lay in the hive? What will happen to them this winter? They have no honey.

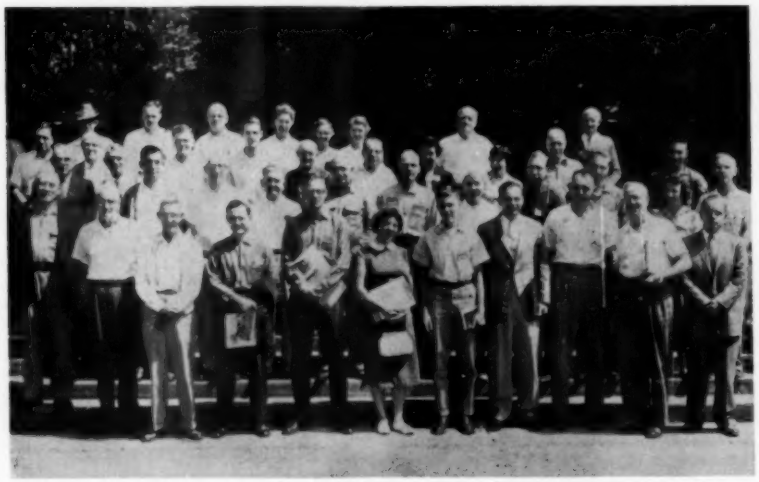
Answer

You are not alone with your problem; many beekeepers in this area have the same trouble. I think it would be safe to blame it on the weather. When there is cold, damp weather with short periods of hot weather, we find swarms and bees rearing large amounts of brood, but producing poor crops of honey. The best treatment you could give them would be to restrict the brood rearing. A queen excluder will do this job of restricting.

If bees have no stores, they must be fed if you expect them to survive the winter. Use a heavy syrup, 2 parts sugar to 1 part water, and feed after the first heavy killing frost. Twenty pounds of sugar should do the job. Some beekeepers will go further and place dry sugar on the inner cover as insurance against starving.

MEETINGS

Pennsylvania Beekeeping Short Course Aug. 21 - 25



This early announcement is for those who wish to plan their summer vacation at the time of the Pennsylvania Beekeeping Short Course so they can attend. This course will begin Monday Aug. 21 at 1:30 P.M. and end Friday Aug. 25 with a banquet in the evening. The course covers nearly all phases of beekeeping from queen rearing through production to marketing. One half of each day is spent with lectures and the other half with practical work in the laboratory or the University apiaries. Beekeepers from eight states attended last year. To register or obtain a program, write Dr. Fred C. Snyder, 211 Armsby Bldg., Penn State University, University Park, Pa.

Minnesota's Nineteenth Annual Beekeepers' Short Course
Friday, Friday Evening and Saturday
May 5 - 6

PROGRAM
307 Coffey Hall

Friday, May 5—

8:00 A.M.—Registration.

9:15 A.M.—The Life of the Bee—M. H. Haydak.

10:00 A.M.—Relation of Beekeeper to the State and the Society—C. D. Floyd.

11:00 A.M.—Bees Need Pollen—M. H. Haydak.

12:00 P.M.—Lunch.

1:30 P.M.—You Should Know Your Honey—M. H. Haydak.

2:30 P.M.—First Step in Beekeeping; Equipment, Assembly, Choice of Proper Site—C. D. Floyd.

3:30 P.M.—Value of Bees to Agriculture—M.H. Haydak.

Friday Evening—

7:00 P.M.—"Living With the Bees" —A talk with colored slides—Chas. S. Hofmann, Janesville, Minn.

Discussion of Various problems of management—M. H. Haydak, C. D. Floyd and C. S. Hofmann.

Saturday, May 6—

9:00 A.M.—Spring and Early Summer Management—M. H. Haydak.

10:00 A.M.—Preparing for the Honeyflow and Taking Care of the Honey Crop—C. D. Floyd.

11:00 A.M.—Principles of Bee Diseases and Their Control—T. A. Gochnauer.

12:00 P.M.—Lunch

1:30 P.M.—Installing Packages, Handling Colonies in the Apiary— M. H. Haydak and C. D. Floyd.

Iowa Short Course
Ames, May 9th and 10th

The Iowa Beekeepers Short Course will be held in Ames at the Memorial Union, Iowa State University on May 9th and 10th.

Dr. Elwood Montgomery of the Department of Entomology, Purdue University will be a guest speaker. Dr. Montgomery will certainly have many items of interest to bring us. Other portions of the program are being planned.

Be sure to be with us at the May Short Course and meeting.
Glen L. Stanley
Secretary

Bristol County (Mass.)
Segregansett, May 21

On Sunday afternoon, May 21 at exactly 3:00 P.M. the Bristol County Association will open up the first of the Summer Sessions of out-of-doors meetings on the grounds of the Bristol County Agricultural School in Segregansett, Massachusetts.

At this time we will have as our guest speakers, Frank S. Shaw, Prof. of Entomology and Beekeeping of the University of Massachusetts, who will deliver a lecture on Processing and Grading Honey, and; Mr. Milo R. Bacon, Chief Apiary Inspector of Massachusetts, who will, also, deliver a lecture on Diseases and Enemies of the Bees. We are very happy to have two such outstanding men at one meeting as their beekeeping knowledge has given many of our members the desired uplift at the right time. A short intermission will follow these lectures after which our president, Mr. Stanley J. Maslanka, will preside over a short business meeting. There will be a demonstration on hiving a package of bees by Mr. Clarence C. Munroe who built us this hive at our first beekeeping lesson. An exciting moment of expectancy will heighten our meeting when a winner will be drawn who will take this hive and bees home with him. Oh, boy! This will conclude the 6th and last lesson of our free beekeeping school.

A large picnic area with tables and chairs will be set up for the convenience of those who wish to bring picnic basket lunches. Hot coffee will be furnished for all by the association planning committee. Do come, one and all, and help us to enjoy the good things in life and living with your friends, the beekeepers. In case of rain, a special room in the building will be used for the lectures.

THE NEW LEVEL-L DRAIN BOARD BEEHIVE IS WAITING FOR YOU.

Mary V. Maslanka
Corresponding Secretary

Northeastern Kansas
Edwardsville, Kansas, June 4th

We welcome all interested in BEE-KEEPING to meet with The Northeastern Kansas Association Sunday, June 4th, 2:30 P.M. at the home of Mr. and Mrs. L. C. Jones 44 South 98th Street, Edwardsville, Kansas. This is approximately one and one quarter miles south of Highways 24-40.

The speaker will be a former queen breeder of Liberty Missouri, Mr. Guy Deimer, who will discuss, "One Story Beekeeping."

This will be the first outdoor meeting of the season and we know you will want to plan to be there and learn for yourself. Come early and get in on those "Behind the scenes, ideas."

R. F. Ferguson
Association Editor

Worcester County (Mass.)
Holden Paxton Line

The May meeting of the Association will be held at the Nature Training School, Route 31 on the Holden Paxton line. The meeting will begin at 2:00 with a picnic supper after the meeting.

Glenn T. McLain, Jr.

South Arkansas Association
Hope, June 3rd

The South Arkansas Association will meet at the Gurnsey school house, two miles south of Hope, Arkansas, on Saturday, June 3rd at 10:00 A.M.

Open discussion on taking honey from the hives will be part of the program. Questions on extracting, packing and selling honey will be answered by commercial beekeepers present.

Plans for the honey cookie baking contest, which will be held at the October meeting, will be completed. Last year's honey cake baking contest was a great success with Mrs. Jesse Nusko of Hope winning first prize of an electric skillet. Junior prizes for the teenage girls will also be awarded again this year.

Our auctions have been very successful in the past and we're looking forward to another one at the June meeting. Proceeds from these auctions make possible the valuable gifts given as prizes in our honey baking contests.

We are glad to note, that through the abolishment of the Arkansas Honey Tax Stamp, there ars signs of encouragement among the smaller beekeepers.

Any out-of-State beekeepers who might happen to be passing through Hope on the day of the meeting would be very welcome to attend the meeting.

We'll furnish fish and coffee. You bring the rest for a big potluck lunch.

Mrs. Mary Lignitz
Reporter

Cook DuPage (Illinois)
St. Casimer Convent, May 28th

The Cook-DuPage Beekeepers will hold their first outdoor meeting this year Sunday, 28 May at 2:00 P.M. at St. Casimer Convent located at a beautiful setting, Marquette Road & Washtenaw Ave., which is 6700 South and 2700 West. If weather is bad there is plenty of room indoors.

Come and see how the Sisters keep bees in the heart of Chicago and enjoy yourself at this beautiful place.

Robert Stauble a former New York State beekeeper and now in charge of the Apiary at St. Mary's Seminary, Techney, Illinois will give a demonstration on, "Supering for the Honeyflow." You fellows and girls who want to produce a better honey crop this year had better come and listen to Bob.

There will be a panel discussion so get busy and think of some of your problems and give them to the panel to answer. You may write them out and need not sign your name if you prefer not to.

All of you folks interested in beekeeping from far and near come and relax from the daily grind with a fine group and become a member if you wish.

Mrs. Katherene Klebes, our hostess, says the members will serve the pot luck, and the Association, the coffee. Bring your own table service.

Ralph O. Klebes
Publicity

Southwestern Ohio Association
Mason, May 20th

The Southwestern Ohio Association will have their Spring Meeting at W.L.W. Broadcasting Co. at Everybody's Farm, Mason, Ohio, Saturday, May 20. The broadcast starts at 12:30 P.M., so be there at 12:00 o'clock noon. After the broadcast, we have a potluck dinner picnic. Everybody's Farm furnishes the milk and the Association, the coffee. There will be a contest with prizes for cakes cooked with honey. The meeting will follow the dinner. Mr. Reese and Mr. Bailey, Extension Specialists, Apiculture; Mr. W. C. Tyree, County agent, Hamilton County; Mr. Chas. K. Neal, Jr., Butler County; Mr. Berman Ross, Warren County; Mr. W. W. Hamilton, Clermont County and your bee inspectors for these counties will all be there.

You have always wanted to see a broadcast from Everybody's Farm. Meet The Conners and Bob Miller. Come out and meet all these people. There will be fun and frolic for all.

James W. Hutton, Vice President

Midwestern Association
Kansas City, Mo., May 21st

The Midwestern Association will hold its regular monthly meeting at the Y.M.C.A. Building, 2017 Van Brunt, Kansas City, Missouri, 2:30 P.M., Sunday, May 21.

There will be a speaker and usual discussion. The subject Management and Swarm Control.

Refreshments will be served. Everyone welcome.

James A. Worrel
Secretary

Eastern Apicultural Society
University of Connecticut, Storrs,
August 10-11-12

This is the 7th Annual Meeting. The Connecticut State Association will be the host. General and special committees will make arrangements for all events and details will be given as we get them.

One feature will be the Fifth Annual Honey show, with Harold L. Kelly of Silver Spring, Maryland in charge. The Bookstall will be in charge of Cary A. Rowland and Carleton Bubbard. Anyone having books to trade or donate address Cary A. Rowland, Round Hill Road, Middletown, Conn.

Kentucky Association
Clarkson, May 30

The Kentucky Association summer meeting will be at the Walter T. Kelley plant on Highway 62 near Clarkson, on May 30th. Leslie Little, Apiarist for Tennessee, will be the main speaker. There may be another out-of-state speaker. The remainder of the program will be by local speakers. A portion of the all day program will consist of a tour of the Kelley plant. Everyone is invited to attend this meeting.

William G. Eaton
Kentucky Assistant Apiarist

Obituaries

ARTHUR C. ALLEN

We have just received word that Arthur C. Allen, who for the last 15 or more years has resided in Fort Meade, Florida, died recently at the age of 96.

Beekeepers in Wisconsin will remember him as being located at Portage, Wisconsin where he kept bees for many years.

His wife survives him and will return to Portage.

RAYMOND GILLETTE, 1892 - 1960

Raymond H. Gillette, of Watertown, Connecticut, passed away suddenly at his home, on November 9th, 1960. He was born in Watertown on November 28th, 1892, son of the late Frederick and Alice (Bull) Gillette. For many years he was employed as a millwright, but during that time carried on a thriving bee and honey business. He is survived by his wife, Elsie (Gibson) Gillette, two sons, Arthur and Sherwood, one daughter, Mrs. Marion King, a sister and nine grandchildren.

Mr. Gillette served as president of the Connecticut Beekeepers Association for one term, and was vice-president for Litchfield County at the time of his death. He had been an A. I. Root Co. dealer for more than thirty years. He was well known in the northwestern part of the state for his great interest in beekeeping, and his willingness to assist others in establishing themselves in the industry. He was a loyal friend,—always interested in promoting the welfare of the Association, and willing to help all who applied to him for advice in solving their beekeeping problems.

Federation News

Secretary Joseph O. Moffett
P. O. Box 855, Fort Collins, Colorado

Federation representatives go to Washington. One of the most important functions of the Federation is to represent beekeepers to government agencies, and to legislators.

In early April Henry Schaefer of Wisconsin and Bob Banker of Minnesota were sent to Washington to present the views of the beekeepers to the proper government officials. The views presented are those voiced by the beekeepers at the national convention, plus the opinions voted on by their elected representatives in the Federation, the Board of Directors and the Executive Committee.

Price support on honey raised. The average price support on honey will be 11.2 cents per pound for the 1961 crop. This is 75% of parity compared to the 60% of parity support for 1960. The average support price in 1960 was 8.6 cents.

Honey has been under price support ten years. The Federation, acting according to the wishes of the majority of its members, worked very hard to obtain price support for honey. These efforts were successful and honey was included in a price support bill passed by Congress in 1950. The support price and details were announced in early 1951.

The support program helped bring the honey market out of the doldrums. The USDA honey promotion program, the school lunch diversion program, and the subsidy for honey exports helped move honey to consumers and increased the demand for it.

As time progressed, the Federation was instrumental in bringing about additions and changes in the program so it better aided the beekeepers. The loan program was one such addition.

Federation hopes beekeepers need never rely on price support again. Recognizing that the only hope for a prosperous bee industry lies in the increased use of honey, the Federation has undertaken several programs to help increase the sale of honey. Examples are the honey queen program, the national honey show, the recent publicity program, the booth at the home economists convention, and the support of the Honey Industry Council of America. While we hope beekeepers need never again sell honey to the government, the support program is a valuable floor under the honey market. Imports and other unseen factors could someday cause a serious drop in prices which price support could help cushion.

Additional members and funds will help Federation programs be successful. More members and more money will enable your Federation to continue to grow and to better serve the beekeepers of the country. Memberships are 7% ahead of last year at this time. If you are not already a member, join the growing Federation today and help advance your industry. Minimum dues are $5.00, and suggested dues for large beekeepers are 4c a colony. Make your check to the American Beekeeping Federation and mail it to P.O. Box 855, Fort Collins, Colorado.

A Buggy without a Horse is Useless, and a Beekeeper without The American Bee Journal can never "Hitch Up" to any New Idea!

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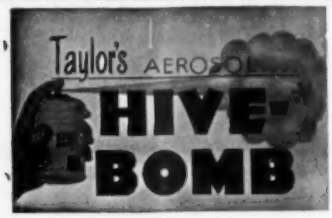
After May 15 deduct 20c per queen.

BESSONET BEE COMPANY **Donaldsonville, La.**



THE PUSH-BUTTON BEE SMOKER

$1.29 *® Stewart Taylor
Camargo, Ill.

HUMPHREY BEE FARM
Reidsville Georgia

CAUCASIAN QUEENS
1-24 $1.50; 25-99 $1.40;
100-up $1.30—Until May 20th.
After May 20th—1-24 90c;
25-49 80c; 50-up 70c.
Clipped and marked at no extra cost.

A NEW IDEA IN INDOOR OBSERVATION HIVES
Fascinating, Entertaining
EDUCATIONAL
Free Bee Literature mailed on request.
Herman Kolb, Bee Hobbyist
Box J-183 Edmond, Okla.

CAUCASIAN QUEENS
FOR MAY SHIPMENT
From 50 or more $1.00 each
CARL LARSEN
1430 Wescott Rd. Colusa, Calif.

HONEY WANTED *large & small lots.*
All Grades - Top Prices.
HONEY SALES COMPANY
2817 No. 2nd St. Minneapolis 11, Minn.

PACKAGE BEES and QUEENS
For Quality and Service
C. F. KOEHNEN & SONS
Glenn, Calif.

WE RENDER WAX
and
WE RENDER FAST SERVICE!

Trade Your Slum, Wax, and Old Combs For Supplies At All Dadant Distribution Points

Rendering facilities at Paris, Texas; Hahira, Georgia; Sioux City, Iowa; and Hamilton, Illinois.

DADANT AND SONS, INC.

GRAY CAUCASIANS
35 years with Caucasians. Same Location. Fine Breeding Stock and Dependable Service. Queens Prepaid. Bees Via P.P. or Express.

Prices	Queens	2 lb. w/q	3 lb. w/q
1 to 49	$1.40	$4.50	$5.50
50 Up	1.25	4.25	5.25

Select Tested Queens $3.00, Breeders $10.00. Queens Marked and/or Clipped Free If Weather Is Favorable.

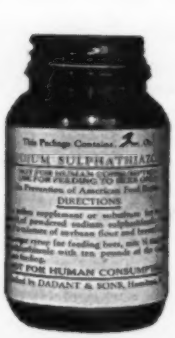
BOLLING BEE CO. **Greenville, Ala.**

LUCEDALE APIARIES BEES: Something to be proud of.
The famous strain developed and produced by us.
THREE BANDED

	Queens	2 lb. w/q	3 lb. w/q
1 - 25	$1.25	$4.25	$5.25
26 up	1.15	4.00	5.00

For queenless package deduct price of queen. After May 15th deduct 40c from each pkg. and 25c from each queen. Let us serve you. Live delivery guaranteed. Phone—WH 7-3286.
LUCEDALE APIARIES LUCEDALE, MISSISSIPPI

YELLOW ITALIAN BEES AND QUEENS
Heavy producing stock and gentle to work with. Liberal overweight pkgs. each headed by a young queen. We guarantee Health Certificate and Live Arrival. 2 lbs. w/q.—$3.50; 3 lbs. w/q.—$4.50; Young Queens—$1.00 ea.
OSCAR ARNOUVILLE **Box 203** **Hamburg, La.**



Drugs for Bee Diseases

Sodium Sulfathiazole
For American foulbrood
•
Terramycin
For European foulbrood
•
Fumidil-B
For Nosema disease
•
Write for directions on how to use.

See our 1961 catalog for prices.

Dadant & Sons, Inc.
Hamilton, Illinois

1961 Package Bees and Italian Queens

WE GIVE 4% EXTRA QUEENS

	1 - 9	10 - 49	50 & up
2-lb. Pkg. Bees and 1 Queen	$5.10	$4.60	$4.20
3-lb. Pkg. Bees and 1 Queen	6.30	5.70	5.30
Additional Queens in packages $1.20 each			
April QUEENS, each	2.00	1.50	1.40
May and June QUEENS	1.50	1.15	1.10

Above prices are F.O.B. Sacramento, Calif. parcel post or express.
Write for information on will — call truck orders.

JOHN S. SHACKELFORD **Rio Oso, California**

It Pays To Buy McVAY'S QUEENS AND PACKAGE BEES
1961 PRICES

	Queens by Air Mail	2-lb. Bees w/Q.	3-lb. Bees w/Q.
1 to 24	$1.40	$4.50	$5.65
25 to 100	1.20	4.25	5.40

Packages by Express or Parcel Post — For Parcel Post Shipment Add $1.10 For 2-Lb. Pkg. And $1.20 For 3-Lb. Package. Difference, If Any, Will Be Refunded.
SMALL ORDERS appreciated and given the same careful attention as large orders.

J. F. McVAY Jackson, Alabama

Caucasians ★ Midnites ★ Italians

We expect to send you better bees and give better service in 1961.

	1 to 24	25 to 99	100 up
2 lb. Package with queen	$5.00	$4.50	$4.20
3 lb. Package with queen	6.40	5.90	5.40
Untested Queens	1.60	1.50	1.40

Add 25c each for Midnite Queens in packages or individually.
Queens clipped and marked on request for 10c each.

THE COFFEY APIARIES **WHITSETT, TEXAS**

Express and telegraph Office Three Rivers, Texas. Tel. Campbellton 7-2525

ITALIAN QUEENS

Health certificate and
live delivery guaranteed.

1 - 10 Air Mail ..... $1.35 each
11 - 25 Air Mail ..... $1.25 each
26 or more Air Mail ..... $1.10 each

HIGNITE BEE FARMS
230 S. Lynchburg Rd. Baytown, Texas

SAVE! SAVE! SAVE! SAVE! SAVE!

Lowest Prices On Cypress Bee Hives

LET US QUOTE YOUR NEEDS
— FREE CATALOG ON REQUEST —

MYERS CRAFT MFG. CO. **Burgaw, N. C.**

PACKAGE BEES AND QUEENS

WALKER-LEE COMPANY
LIVE OAK, CALIFORNIA

SPEARS APIARIES

SIMMESPORT LOUISIANA

Italian workers that are quiet, pleasing to the eye, and industrious.
2 lb. pkgs. w/q. $3.50
3 lb. pkgs. w/q. 4.50
Live delivery guaranteed - Satisfaction assured

PACKAGE BEES
ITALIAN QUEENS

$1.40 Each (up to 50)
In larger lots, write for prices
Queens raised from heavy-producing stock. Health Certificate.

BEES— 2-lbs. $4.50 3-lbs. $5.70
What have you to trade?

Homer W. Richard
1411 Champagnolle St., El Dorado, Ark.

FREE...
A Sample Copy
"Gleanings in Bee Culture"
Look it Over — You Will Like It
A. I. ROOT CO., Medina, Ohio

QUEENS—
Carniolan and Caucasian

Be assured of maximum honey crop by using either of these queens. Linebred many generations for gentleness, quick spring buildup and production. These bees will winter in any climate in US or Canada when given sufficient available stores.
QUEENS—$1.45 each Air Mail, discount in quantity.

W. D. REAMS
BOX 458 LA BELLE, FLA.
Phone ORange 5-2732

STOLLER'S
Frame Spacers

The Finest Thing Offered Beekeepers

What beautiful even combs to uncap and labor saved are continued reports of perfectly spaced combs.

STOLLER HONEY FARMS
LATTY, OHIO

YELLOW ITALIAN
BEES & QUEENS

Bred for honey production and easy handling. We guarantee full weight pkgs. headed by young laying queens. Health certificate and live arrival guaranteed.

2 lbs. with queen	$3.50
3 lbs. with queen	4.50
Young laying queens	ea. 1.00

JOHNNIE ARNOUVILLE
Box 106 Hamburg, La.

NORMAN'S

IMPROVED 3-BAND ITALIAN BEES AND QUEENS

Our bees are gentle and the queens are very prolific, laying solid combs of brood with few misses.

We are passing all of our bees through an excluder so that you will not receive any drones, and by April 1st, the swarming season is on at our farm, so all of the old bees have died off and you will receive young bees.

2 lb. pkg. w/q	$3.75
3 lb. pkg. w/q	4.75
4 lb. pkg. w/q	5.75
Queens	1.00

Full weight, safe arrival guaranteed, with health certificate furnished.

Packages shipped F.O.B. Express or via Parcel Post collect.

NORMAN BEE CO.
Route 1 Ramer, Ala.

QUALITY ITALIANS
PACKAGES AND QUEENS

2 lb. pkgs. w/q $3.40
3 lb. pkgs. w/q 4.40
Extra Queens Air Mail ... 1.00
Queens after May 15th .90c.

WILKES APIARIES
Box 206 Ph. 2411 Hamburg, La.

Why Pay More?

CHRYSLER'S ALL STEEL QUEEN EXCLUDER

The only worth while Excluder on the market.
Price ... $1.28 each

CHRYSLER'S CRIMP WIRED FOUNDATION

7 sheets per lb. Made from pure beeswax.
10 crimped, spring steel wires, tempered and accurately embedded.
Price ... 25 lbs. up ... $1.10 per lb.

Write for our 1961 Catalogue

W. A. CHRYSLER & SON
Chatham, Ontario, Canada

W. C. GRIFFITH'S APIARIES
(Successor of Leslie Little)
ITALIAN QUEENS ROYAL JELLY
BOOKING ORDERS

1 - 24	$1.50 each
25 - 99	1.40 each
100 and up	1.30 each

4811 Abbay Dr. Nashville, Tenn.

Exchange Your Beeswax For Foundation

Write For Price List

WAX WORKERS, INC.
1330 Slaterville Road Ithaca, N. Y.
Beeswax Rendering Service

QUEENS

Dark Italian **Caucasian**

We have open dates for both strains for May and later.

1-24 ..$1.25 25-99 ..$1.15 100-499 ..$1.10

After May 20— 1 - 24 ..80c 25 up ..75c

Either Italian or Caucasian tested—$2.50
Either Italian or Caucasian breeders—$10.00

We appreciate your business.

Louis L. Couch **Pineville, La.**

J. L. O'FERRELL & SONS

Producers of Queens, Package Bees and Honey
Dadants Midnite Hybrids — Carniolan & Caucasians
409 O'FERRELL STREET
La Belle, Fla. Greensboro, N. C.

PURE FRESH ROYAL JELLY

Quantity	Packages with Midnite Queens 1 - 24	25 - 99	100-up	Packages with Carniolan and Caucasian Queens 1 - 24	25 - 99	100-up
2 lb.	$4.80	$4.55	$4.30	$4.50	$4.25	$4.00
3 lb.	6.00	5.75	5.50	5.70	5.45	5.20
4 lb.	7.20	6.95	6.70	6.90	6.65	6.40
Midnite	$1.75	—EXTRA QUEENS— $1.65	$1.55	Carniolan and Caucasian $1.45	$1.35	$1.25

All tested queens $2.50. Clipped and Marked Queens 10c each.
All queens are mated in isolated mating yards to assure pure breeding. Guaranteed live delivery.

BOOKING ORDERS FOR 1961

Texas Caucasian Queens and Packages

	1 - 24	25 - 99	100 - up
2 lb. Pkg. with Queen	$4.50	$4.25	$4.00
3 lb. Pkg. with Queen	5.60	5.30	5.00
Queens	1.45	1.35	1.25

All Queens personally produced by J. E. Hastings and his Breeding Stock.
Bred for non-swarming, very gentle, good honey producers.
10% books your order, balance two weeks prior to shipping.
Health Certificate, weight and live arrival guaranteed.
Five cents extra for marking or clipping.

KANE'S APIARIES Route 1 Hallettsville, Texas
Phone SW 8-3039

Offered For First Time

Dadant's New Starline Hybrid Queens ..... $1.75 each
100 up ..... $1.55 each
2 lb. package bees headed with these queens ... $4.75 each
3 lb. package bees with these queens ..... 5.75 each

These queens have been tested over a 5 year period and have been found to be superior to all previous Hybrids for characteristics such as honey production, gentleness of temper, preparation for winter buildup. This new Hybrid has been tried for extracted, bulk and section comb production and is better than the old hybrid in all types of honey producing colonies.

B.A. ANDERSON Rt. 1 Opp, Ala.
Phone Hyatt 3-7584

QUEENS - Air Mail - Each $1.00

2-LB. PKG. WITH QUEEN express collect (not postpaid) $3.50
3-LB. PKG. WITH QUEEN express collect (not postpaid) $4.50

GULF COAST BEE CO., Schriever, La.

— The Market Place —

CLASSIFIED ADVERTISING—Net price 16 cents per word per insertion. Initials, letters or combination of letters as in street address, counted as individual words. No advertisement accepted for less than ten words. Payable cash in advance. Keyed Classified, 25 cents additional.

BEES AND QUEENS

CAUCASIAN QUEENS $1.00 each. Eppling's Apiaries, Edgemont, Covington, Virginia.

CARNIOLAN OR CAUCASIAN bees and queens. 2 lb. pkg. $4.00, 3 lb. pkg. $5.00. Queens $1.00. Roy Waddell, Rt. 3, Woodruff, South Carolina.

CARNIOLAN BEES and queens. 2 lb. package $4.00, 3 lb. package $5.00, Queens $1.00. TILLERY BROTHERS, Route 3, Greenville, Ala.

ITALIAN QUEENS, $1.50; Starline $2.00. Write for quantity prices. April 1st-June 1st. No packages. S. J. Head, Crossett, Arkansas.

QUALITY ITALIAN Queen bees—Until June 1st, each $1.35, 5 or more $1.30 each, 25 or more $1.25 each. Reduced prices after June 1st. Write for package bee prices. A. G. Woodman Co., Grand Rapids, Michigan or Lena, South Carolina.

3 LB. ITALIAN PACKAGE bees with untested queen $4.25; 4 lb. bees with untested queen $5.25. Guaranteed live arrival. Deduct 80c for queenless package bees. Golden Apiary, Maurice Roy, Hessmer, La.

ITALIANS: 3 lb. package with queen $5.90; Queens $1.50. Sheppard Apiaries, Aberdeen, North Carolina.

ITALIAN AND CARNIOLAN bees 3 lb. $5.00; 5 lb. $7.00. Extra queens $1.30. Luther Pickett, Efland, North Carolina.

CAUCASIAN QUEENS: 1-24 air mail $1.45 each, 25-99 air mail $1.35 each, 100 up air mail $1.25 each. Leo Kretzschmar, 701 E. State St., Eagle Lake, Texas.

GOLDEN ITALIAN queens. Heavy honey producers 90c each. Guaranteed live arrival and health certificate. Allen H. Gauthier, Hamburg, Louisiana.

ITALIAN BEES and queens. Send us your rush orders. Queens $1.35; 2-lb. $4.25; 3-lb.$5.25. HUBBARD APIARIES, ONSTED, MICHIGAN.

CAUCASIAN QUEENS, $1.25 each. Extra good producers and gentle to handle. C. D. Wardell & Company, Box 6226, Palestine, Texas.

FOR SALE

FOR SALE: Honey tanks, Neises filter, melting tanks, uncapping can, bottling gates, etc. Herbert Reim, 924 Labaree St., Watertown, Wisconsin.

TWENTY ACRE tract, modern home, honey house with other buildings, 232 colonies bees, equipment. Carl Haag, Alton, Iowa.

HIVE LOADER used, 6 volt, excellent condition, $685.00 or trade for bee equipment. McClain, Colome, South Dakota.

FOR SALE: Complete bee outfit, 30-frame radial, approximately 100 colonies of bees, 300 supers with combs, in top shape. Mrs. Harry Canfield, Dallas City, Illinois.

TWO Superior Lifetime 8-frame extractors, Robinson waxpress, and other equipment in good condition. Cox Honey Farms, Shelley, Idaho.

SEMI TRUCK load clover honey in new 60 lb. cans. My bees are for sale or lease to reliable person. Ray Johnson, Box 605, Princeville, Ill.

FOR SALE: 100 colonies bees in 1½ stories, state inspected, plenty of equipment for same. Harley Holt, Monroe City, Indiana.

40 COLONIES, singles, doubles, triples, some four high plus miscellaneous equipment $200.00. R. S. Young, Box 403, San Luis Obispo, California. Telephone Liberty 3-1143.

SELLING OUT equipment, going fast, new lumber and new metal top telescope covers, $1.65, new 6-⅝ shallows 95c, reconditioned equipment low, low prices. C. L. McClain, R. 3, Pinconning, Michigan.

16 COLONIES Starlines in double deep supers near Detroit, 45 empties with frames and 250 sheets foundation, no disease, best offer. Kruezek, Cross Village, Michigan.

NEW EQUIPMENT for 300 hives for sale. Harvey Steves, Rye Star Rt., Box 165, Pueblo, Colorado.

USED BEE equipment, metal covers, bottoms, hive bodies, tanks, excluders, etc. Also items factory made and good shape; inspected. If you can use a large quantity you can't beat the price. F. K. Thomson, Gillett, Wisconsin.

200 HIVES of bees, 10-frame packages installed April 18th. Plenty of supers for the above A-1 condition. Kenneth Nelson, Harcourt, Iowa.

FOR SALE: 6 colonies in 2 bodies, supers $20.00 each. Paul Belot, Brookfield, Wis.

35 HIVES OF bees plus supers are for sale from Mary Ann Johnson, 513 E. Third St., Sandwich, Illinois. Phone 4256.

FOR SALE: Domestic Pollen, Royal Jelly. Also Pollen Supplement Dry Mix (You add water and honey). Royal Jelly Enterprises, 1017 Los Carneros Avenue, Napa, California.

FREE CATALOG: Cypress Bee Hives and bee supplies. Save up to 40% on hives that last. Myers Craft Manufacturing Co., Burgaw, North Carolina.

SUPER STRENGTH 100 mg. Royal Jelly capsules in bottles of 100 for $10.00. Prairie View Honey Co. 12303 Twelfth St., Detroit 6, Michigan.

ROYAL JELLY $8.00 ounce, eight ounces $50.00, full pound $90.00. Delivered Air Mail. Phillips Honey Co., P. O. Box 1506, Clearwater, Florida.

GOOD COMMERCIAL outfit for sale, entirely equipped for honey production in good location. Retirement necessary. Supers and hives with drawn combs; many hives with pollen and honey in nice condition for new packages. Will sell in part, or complete or by payments. Wonderful chance. Write for particulars. Russell D. Smalley, Beaver, Iowa.

SEVERAL LOADS of single story 10 frame colonies. You divide in Central California. Get one colony queenright plus one beeless to divide into for $6.50 each. Art Harrison, P.O. Box 602, Los Banos, California. Phone 2151

Our book HOW TO KEEP BEES AND SELL HONEY 75c postpaid contains over 100 pages and 175 pictures explains everything from starting to selling the crop. SUPER MARKET BARGAIN. Walter T. Kelley Co., Clarkson, Kentucky.

USED EXTRACTORS, and used bee equipment of all types. Wally's Bee Enterprise, Inc., Walthill, Nebraska.

NEW CYPRESS BEE WARE 9⅝ supers $1.05, 6⅝ supers $.70, 5¾ super bottoms or covers $.60, telescope cover (without metal) $.75. C. L. Stonecypher, Homerville, Georgia.

85 TWO STORY, ten frame colonies complete supers, extracting and miscellaneous equipment for sale. State inspected. Best offer. Write to George Eich, 333 Pine St., Joliet, Illinois.

HONEY LABELS

Improved designs, embodying color, balance, simplicity, and distinction. Please send for free samples & prices.

C. W. AEPPLER COMPANY

Oconomowoc, Wisconsin

400 UNPAINTED brand new supers, 4,000 unnailed frames and 500 lbs. wired foundation. George Koncz, 19611 Benwood St., Covina, Calif.

FOR SALE: 80 10 fr. colonies of Italian bees complete with supers and equipment in first class shape. Carl Opsata, Bemidji, Minnesota.

HONEY FOR SALE

SOUTH DAKOTA CLOVER HONEY, white to water white, low moisture content. Truck load lots in new cans. SCHMIDT HONEY FARMS, WINNER, SOUTH DAKOTA.

WHITE CLOVER honey in new sixties. Wahls Apiaries, Chenoa, Illinois.

WHITE CLOVER HONEY in sixties. Ralph Gamber, 911 State, Lancaster, Pa.

WE CAN SUPPLY NICE white honey. Immediate delivery. Russell Smalley. Beaver, Iowa.

NEW FLORIDA TWIN PACK. Two three-pound cans of your choice. Orange Blossom, Tupelo, Gallberry, or Palmetto $3.00 postpaid. Phillips Honey Co., P. O. Box 1506, Clearwater, Fla.

FOR SALE: White clover and light amber goldenrod honey, in 60 lb. cans, truck or carload. CLOVERDALE HONEY CO., Fredonia, New York.

HONEY and BEESWAX WANTED

WANTED several hundred cans of Minnesota light honey. Mail sample and price to: Gilbert Smith, Wadena, Minnesota.

WANTED—Extra white and light amber honey. Let us ship you the containers. Sell us your honey for CASH on delivery. The Hubbard Apiaries, Manufacturers of Bee Supplies and Comb Foundation, Onsted, Mich.

HONEY AND Beeswax wanted. Melford Olson Honey Co., 5201 Douglas Drive, Minneapolis 22, Minnesota.

ALL GRADES extracted honey in 60 lb. cans or 600 lb. drums. Prairie View Honey Co. 12303 12th St., Detroit 6, Michigan.

WRITE FOR SHIPPING TAGS and current quotations on rendered beeswax. Any amount from one pound up bought. If you have 25 pounds or more, save 25% by letting us work it into foundation for you. Walter T. Kelley Co., Clarkson, Ky.

EXTRACTED HONEY wanted. Please contact Russell Smalley, Beaver, Iowa.

BEFORE you sell your honey or buy your honey containers see HUBBARD APIARIES, ONSTED, MICHIGAN.

WANTED—Light amber honey in 60 lb. cans or 600 lb. drums. Large and small lots. References furnished. Cloverland Products, 6314 West Patterson Avenue, Chicago 34, Ill.

SUPPLIES

100% PURE BEESWAX, the genuine bee approved comb foundation. Rib-wired with hooks—plain medium brood—thin super—wooden bee supplies. Ask about our warehouse nearest you. These supplies are manufactured by us. Buy direct of factory. HUBBARD APIARIES, ONSTED, MICHIGAN.

STANDARD hive bodies $1.10, 9-⅛" frames $70.00 per M, grooved cleats $36.00 per M, 1-¾" flat cleats $30.00 per M. Buy factory direct, F.O.B. Scott Apiaries, S. Ave., Ronan, Montana.

YEAR END bee supply and comb foundation prices now. Send list for quotation at once shipment from overstocked factory warehouse. Send us your rush orders for bees and queens direct shipment from the Gulf States. Phone HOward 1-3481, HUBBARD APIARIES, ONSTED, MICHIGAN.

$$$$ 9-⅝ supers $115.00 a hundred, 6-⅝ supers $90.00 a hundred, 9-⅛ frames $80.00 a thousand, 6-⅜ frames $70.00 a thousand. Write for free catalog on many other money saving bee supplies KEHM BROS. APIARIES, Rt. 1, Box 346, Grand Island, Nebr.

LARGE BEE SUPPLY Manufacturer & Honey Processor wants Supply Dealers & Honey Buyers. Write for Catalog and Honey Prices. Hubbard Apiaries, Onsted, Michigan.

500 BEEWAY SECTIONS best quality $16.00, 5 lb. thin super foundation for above sections (100% pure beeswax) $6.50. HUBBARD APIARIES, ONSTED, MICHIGAN.

THE BIGGEST BEE SUPPLY CATALOGUE PUBLISHED (64 pages) free for the asking. Big factory manufauturing a complete line of wooden goods, comb foundation, metal goods, veils and gloves, carloads in stock, daily shipments. WALTER T. KELLEY CO., CLARKSON, KY.

WRITE FOR CATALOGUE. Quality bee supplies at factory prices. Prompt shipment. Satisfaction guaranteed. The Hubbard Apiaries, Manufacturers of Beekeepers' Supplies, Onsted, Michigan.

MONTANA WYOMING Beekeepers order your Dadant bee supplies from Smith Bee Supply, 1210 Lewis Ave., Billings, Montana.

No. 1 Hive Bodies at $2.00, No. 2 Hive Bodies at $1.75, Covers and Bottom Boards at $1.10, Shallow Extracting Supers at $1.25. Hoffman full depth frames (per hundred) $11.00. Catalog on request. Hagen-Lunceford Mfg. & Supply Co., 2500 N. 4th St., Coeur d'Alene, Idaho.

BEE SUPPLIES: Send for price list. Bee-Maid Mfg. Co., P.O. Box 61, Beloit, Wisconsin.

BRAND MELTERS, ELECTRIC OR STEAM, and other bee supplies. Ask for catalogue, Hodgson Bee Supplies Ltd., 7925 - 13th Ave., New Westminster, British Columbia.

POSITIONS and HELP WANTED

WANTED 2 men with some experience to work in our apiaries, 5 day work week. Top wages. Schultz Honey Farms, Ripon, Wisconsin.

WANTED

WANTED to buy good used 4 to 10 frame reversible extractors. Send full information in first letter. Wallace Anderson, Star R. No. 4, Box 175, Hibbing, Minnesota.

QUANTITY OF 6-⅝" supers Standard or Modified Dadant, state quantity, price, condition in first letter. B. J. Ginsbach, Route 3, Sioux Falls, S. D.

BEE OUTFITS any size or locations. Wally's Bee Enterprise, Inc., Walthill, Nebraska.

WANTED—50 to 500 colonies within 500 miles of Freeport. Cloverland Products, Route 2, Freeport, Illinois.

WANTED: Radial extractor, prefer 20 frame simplicity. Max Griffie, Route 3, Newville, Pa.

SEEDS AND PLANTS

ARGENTINE RAPE seed, while supply lasts, 5 pounds postpaid $3.50; lots of 20 pounds upwards 25c pound, not prepaid. Pellett Gardens, Atlantic, Iowa.

200 lb. Argentine Rape Seed a honey plant. Write for price. Hubbard Apiaries, Onsted, Mich.

HONEY PLANTS our specialty. Catalog on request. Pellett Gardens, Atlantic, Iowa.

MISCELLANEOUS

OVERSTOCKED on Zinc Queen Excluders. Write for special price. HUBBARD APIARIES, ONSTED, MICHIGAN.

BEES REMOVED FROM house or tree to hive without touching either house or bees. Bees will then move honey into hive. Save property, honey and bees with my method. Send $2.00 for details. Satisfaction guaranteed. George Hawkins, Rt. 1, Lawson, Mo.

RENDERING EVERY day in our all new plant. All honey saved from cappings. Rendering slumgum and old combs. Write for free shipping tags and rates, Hubbard Apiaries, Onsted, Michigan.

OF INTEREST TO WOMEN

PLASTIC FREEZER CONTAINERS. Square pints, $9.95; quarts, $15.00 per hundred, postpaid. Sample pint 25c. Oxboro, Box 7031 MM, Minneapolis 11, Minn.

Three Band and Pure Italian Hybrid Package Bees and Queens

We Ship Pure Worker Bees By Mail, Express or Truck

WE GUARANTEE LIVE ARRIVAL

1961 PRICES HERE

Each with a young Laying Queen

Lots of	2 lbs.	3 lbs.	4 lbs.	5 lbs.
1 to 11 Each	$4.25	$5.35	$6.45	$7.55
12 to 20 Each	4.05	5.10	6.15	7.20
30 or More Each	3.85	4.85	5.85	6.80

Tested Queens—$2.00

JACKSON APIARIES

P. O. Box 265 **FUNSTON, GA.**

Time to check your beekeeping equipment!

Use

LOTZ SECTIONS

Made from

Select Basswood—grown in the heart of the Basswood country

●

Write for our new price list

●

AUGUST LOTZ COMPANY

Manufacturers & Retailers of Bee Supplies

BOYD, WISCONSIN

Those Good Dark Italian Queens

ONE strain for more than 30 years

1 to 24	$1.40 each
25 to 99	1.30 each
100 and up	1.25 each

Clipped or Marked 5c each operation.
Used by many large producers for 30 years.

WEAVER APIARIES, Navasota, Texas, Phone TA-52312

JENSEN'S
BETTER BRED QUEENS

DADANT STARLINE			JENSEN'S MAGNOLIA		
1 - 24	25 - 99	100 - up	1 - 24	25 - 99	100 - up
$1.75	$1.65	$1.55	$1.45	$1.35	$1.25

Air Mail Postage Paid on Queens. Clipped Free. Marked 10c.
Summer Prices will begin June 1st.

JENSEN'S APIARIES, Macon, Miss., Phone 170J

CAUCASIAN QUEENS and PACKAGE BEES

Packages with Caucasian Queens	1-24	25-99	100 up
2 lb.	$4.75	$4.50	$4.25
3 lb.	5.85	5.60	5.35
Extra Caucasian Queens	1.45	1.35	1.25

Packages with Dadant's Midnite Hybrid Queens	1-24	25-99	100 up
2 lb.	$5.00	$4.75	$4.50
3 lb.	6.10	5.85	5.60
Extra Midnite Hybrid Queens	1.70	1.60	1.50

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Queens postpaid	1.45	1.35	1.25

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PRICES THRU MAY 20th:					
1-24	$1.50	$4.75	$6.00	$7.10	$8.35
25-99	1.40	4.50	5.65	6.85	8.10
100 up	1.30	4.25	5.40	6.60	7.85
PRICES AFTER MAY 20th:					
1-24	1.30	4.00	5.00	6.00	7.00
25-99	1.20	3.75	4.75	5.75	6.75
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Nice large Queens	1.15	1.10	1.00

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4 lb. and queen	7.50	7.25	7.00
5 lb. and queen	8.60	8.35	8.10

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2-lb. Pkgs. w/q.	3.75	3.50
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4-lb. Pkgs. w/q.	5.75	5.50

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Homan's Quality Bred Caucasian or Italian

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$3.75	$4.75	$5.75	$6.75

Queens—$1.15

Prices After May 20

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$3.00	$3.75	$4.50	$5.25

Queens—1-24 $ .85; 25-up $ .75

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4 lb. package and queen	6.50	6.25	6.00
5 lb. package and queen	7.50	7.25	7.00
Untested queens	1.50	1.35	1.25

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Select Untested Queens—March 1st to Dec. 1st

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American Bee Journal

Hamilton, Illinois

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QUEEN PRICES AS FOLLOWS:

	Regular Italian		Island Hybrid	
	to 5/20	after 5/20	to 5/20	after 5/20
1 - 24, ea.	$1.45	$1.20	$1.75	$1.50
25 - 99, ea.	1.35	1.10	1.65	1.40
100 up, ea.	1.25	1.00	1.55	1.30

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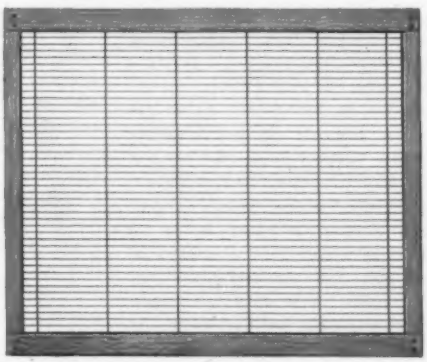

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DADANT & SONS, INC.

HAMILTON ILLINOIS

Crop and Market

by M. G. Dadant

Throughout the entire Northeast and into the Central West, bees are apparently in excellent condition, having maintained themselves through a more or less moderate winter punctuated by many snows. There was a tendency, however, for bees to use up the stores early in view of the fact that pollen was not available until quite late in the spring season. This rules as well for the Central West and into the prairie states.

In the Southeast, the same conditions are pretty much true. Seasonably cool weather mixed with rains has worked against bees building themselves up as rapidly as possible and moreover being in need of stores to keep them from retrogressing. In fact, we might consider such conditions as pretty general even in the inter-mountain area and farther south and on to the west coast where the early temperatures were not conducive to early breeding and in some instances bees have "built on the flow" instead of being built "for the flow."

Honey Plants

The very fact that most of the northern areas have been covered with snow of varying depths for most of the winter, bodes well for the plants where the plants in the first place were in sufficient numbers. This applies particularly to the Northeast and East Central West. Farther than this as we go west, there seems to be a possibility that the honey plants are not as plentiful as the beekeeper might wish them.

In the Southeast, honey plants seem to be in better than average condition with, of course, some difficulty on account of the inability of bees to get to them on account of cool weather and storms. One breeder had even a tornado in his queen rearing yard.

In the plains states, there is possibly less prospect of plants being up to normal on account of shortage of moisture last fall. In irrigated sections, of course, this does not apply as the honey plants will no doubt be quite satisfactory if the irrigating system has plenty of water.

On the west coast, the irrigated sections, of course, are normal. However, in all desert areas, particularly in southern California and the parts of Utah and Nevada surrounding it, there has been a very subnormal amount of rainfall and in the entire area plants have dried up rather than yield the normal amount of nectar.

On the whole, however, from Florida to New Mexico and north to Maine and west to the Central West, in general, honey plants have been favored by moisture.

Moisture

As we have reported above, moisture has been quite sufficient in the South, in the Northeast and in the East Central West.

The Dakotas, Montana and the intermountain states are all complaining that while some late moisture has come, there is still not sufficient for the summer's need and the same applies to Idaho and into Nevada and Utah, and on into Arizona.

Northern California perhaps and Ontario and Oregon and Washington appear to have plenty of moisture for the season's needs with average rainfall, but southern California undoubtedly is still lacking particularly in those unirrigated areas.

Honeyflows

Naturally, not many honeyflows to be reported. The stimulative flows generally have been under par on account of the difficulty with cool weather and rain although the change has come about April 15. Unfortunately, the Government Weather Service is reporting temperatures from 6 to 8 degrees to below normal until June 1 which in itself should perhaps be a deterrent. Michigan and Wisconsin apparently are complaining somewhat of a shortage of moisture although late snow may have helped.

In Texas the early flows have been satisfactory and stimulative flows including titi in the Southeast apparently are all right if weather breaks satisfactorily from the time this is written on through the season. (April 21)

Apparently the orange flows are fairly good in Florida and nothing to brag about in California, being late and of a questionable nature, some sections admitting only 15 to 20 pounds of surplus from orange.

Honey Left

We can blanket the whole eastern half of the country and say that there is a negligible amount of honey left to go into the new crop season. Two states which are an exception to this are Michigan and possibly Wisconsin. Michigan seems never to have "gotten her feet under her" in the matter of disposing of honey. And the importation of good white Argentine honey seems to have complicated the matter.

Reports from Montana and a few other sections would indicate that the beekeepers who held, in the hopes of getting a "fancy" price at 14½, 15 or even higher prices, are going to be disappointed inasmuch as the packers are not buying now or if they are buying are making a generous mixture with good Argentine white honey at a price which allows them to work at a better profit.

In the Pacific coast states, however, honey again is very well cleaned up and apparently good white honey is being either imported or shipped from farther east.

Retail Prices

There seems to have been very little disturbance of retail prices throughout most of the country, except in some of the heavy distribution areas, namely, in the larger cities where there has been a special price offered on special packs. This is noticeable in Michigan, around Chicago, and even in New York and some of the other larger cities.

On the whole, however, most of the domestic honey was pretty well spoken for or distributed before the possibility of the Argentine competition. This has probably worsened the price on bulk honey at least one cent to two cents per pound, where offers have been made. We learn of an offer in Texas for good white vetch new crop honey at 13 cents f.o.b. beekeeper's shipping point. The only report on new honey which we have. Orange honey prices in California have been maintained in view of the marginal crop.

Canadian Provinces

Touching all through the Canadian provinces, there seems to be a shortness of moisture, particularly true in Ontario and Manitoba.

Most of the honey is probably disposed of except that Ontario still is carrying a surplus of some two to three million pounds into the new crop year which, of course, is a reduction over a year ago.

Honey Wanted—Cars and less than car. Top Prices.
W. F. STRAUB & COMPANY
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Perfect for school, exhibit, or honey stand, the new "Junior Observation Hive" comes completely assembled and weighs only 1½ pounds.

It's easy to fill and you don't have to rob a valuable brood comb from one of your standard colonies. The students can watch the comb being built from foundation.

There's no glass to break. An entrance spout is provided so the hive can be installed in a window.

A feeding trough is built into the back for feeding the bees through the rear ventilator. **The price is only $1.95 plus postage.** The new "Junior Observation Hive" is available at your nearest Root dealer or one of the outlets listed below.

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Easy to assemble. Only four nails in the bottom bar. No other nailing needed.

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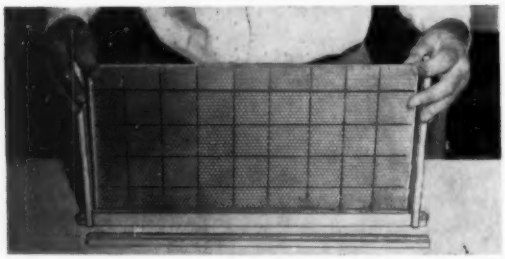

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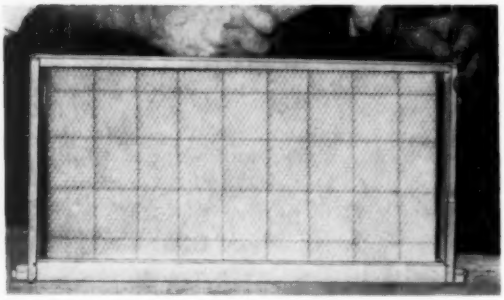
The 8 vertical wires and 4 cross wires are completely imbedded, and are interlocked in 4 metal bound edges for added strength.

Do You Want Extra Strong Combs?



COMBINE DADANT'S NAILLESS TOPBAR FRAMES* and GILT-4-EDGE FOUNDATION

* All Bottombars have 4 Drilled Holes for Easy Nailing.

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